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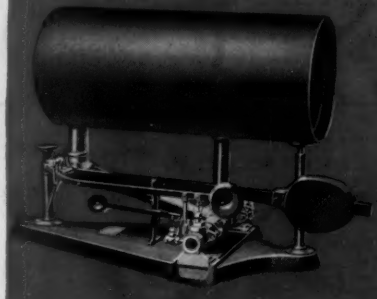

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By FRANK S. HENDERSON, JOHN E. DAKIN COMPANY

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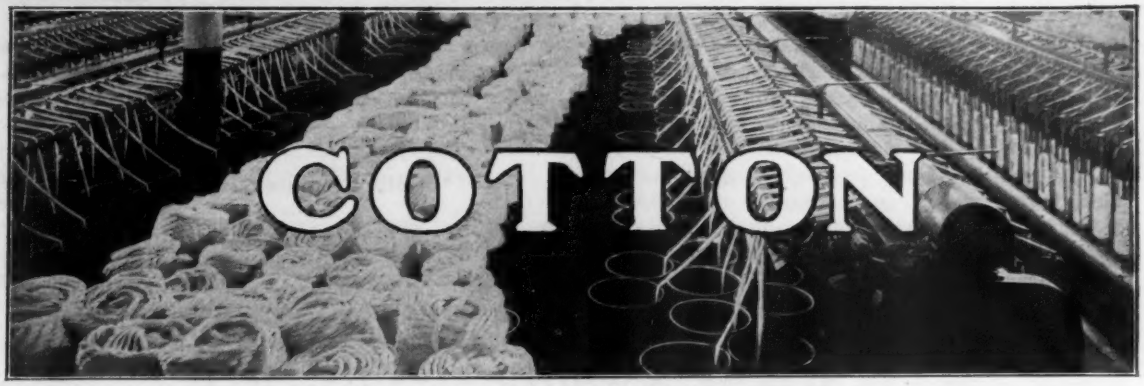

December, Nineteen-Twenty-Six

Ubiquitous Taxes.

President Coolidge's suggestion that Congress authorize a rebate—a sort of "dividend" as it were—to taxpayers has caused the eternal problem of taxes to again take its place in the forefront of national questions. The proposal certainly has the merit of novelty and, if as nothing more than an experiment, is worthy of adoption. Congress did something similar in 1924 when payers of income taxes were allowed to deduct 25 per cent from last moment payments due the Treasury. Martin B. Madden, chairman of the Appropriations Committee of the U. S. House of Representatives, has advocated, for some time, a permanent rebating policy.

Something of the kind might be highly advantageous. For the existence of the surplus which the President would return to the taxpayers is illustrative of the difficulty of squaring Federal Government collections with actual revenue needs. The ink is hardly dry on the tax act under which the surplus is accumulating. When that act was being framed, many predicted that it carried such radical reduction in taxes that a deficit was in prospect. It was the last of a half dozen attempts, in the last seven years, to bring Federal Government revenues down to a parity with scheduled needs. All, curiously, have failed. The reason for this is that conditions have so changed that there have been no capable gauges for measuring the productivity of Federal tax measures.

In the matter of taxes, the Government still is hobbled by influences growing out of the war. Taking lessons from countries that preceded ours in the war, Congress set up a finance machine bigger and more cumbersome than had ever operated before. It was built with the view of the war lasting possibly for several years more. But the war ended before the capacity of the machine was lowered by the strain of extraordinary demand upon it. Thus, while other war-involved governments were turning to all kinds of make-shifts in getting funds with which to keep going ours have had to struggle with the problem of excess funds.

Every tax act passed since the war has yielded more than was expected of it. Fights for revisions downward had to be carried on against subtle obstacles. High surtaxes and profits taxes whetted, among politicians who protested against governmental extravagance, raging appetites for easy money procured from apparently limited sources. Many could not see how excessive surtaxes worked in the end towards reducing the revenues and complicating harmfully the national economy.

Many reductions in tax rates actually caused more revenue to come from affected circles. Hence there has recurrently rolled into the Treasury more money than the Government ostensibliy was asking from the taxpaying public. Practically at the end of every fiscal year since the war there has been a big surplus in the Treasury.

These surpluses have come in handily because of the use that could be made of them in reducing the big public debt made on account of the war. This debt has been reduced practically 25 per cent, against the approximately 10 per cent reduction that would have been achieved had only the sinking fund been applied to that purpose.

The Federal Government always has held to the policy that debt, even funded debt, should be extinguished as rapidly as possible. The merit of this policy, however, is not indisputable. Other governments, notably that of Great Britain, which have had more experience than ours with public debt, have pursued on the whole a contrary policy, holding somewhat with Alexander Hamilton that a national debt well distributed may be a national blessing. The policy has not been adhered to practically by other units of government in this country, and it is being adhered to less and less by big commercial corporatoins and even individuals. But this is a phase of finance and economics that still is in the making.

Unanticipated Federal Treasury surpluses certainly are not justified by the good use that can be made of them in retiring public debt beyond the program adopted. In fact, they can be justified on no ground except their inevitability at times, when sound finance is practiced.

This inevitability is much more pronounced now than ever before. The Government's taxing methods make returns depend in vast measure on general business conditions. These cannot always be anticipated, as shown by experiences during the last several years.

About the only way enough revenue can be assured is by providing for the collection of too much when conditions are good. This excess is collected under a sort of false pretense and, if practicable, should be returned to the taxpayers. This not only is morally just, but the existence of surpluses, as everyone knows, are almost irresistable temptations to spend unwisely if not foolishly.

But rebating taxes equitably is difficult. For millions get no tax receipts for contributions made by them towards

the accumulation of surpluses. The $250,000,000 that is to be in the Treasury on June 30, next, unless disposed of in advance, was paid in the form of tariff duties and miscellaneous taxes as well as income taxes. But rebates can be made only to payers of income taxes.

This probably is better than no rebating at all. Along with it, however, should go some measure of actual tax reduction. And quite probably a compromise of that sort will be arrived at when the matter is passed upon by Congress at the coming session.

And the item which should be first considered in reducing taxes should be that having to do with takings from the incomes of corporations. This item has been changed scarcely at all since the war. The war profits taxes were of course abandoned and the old corporation stock tax was repealed at the last session of Congress. The last, however, was added to the corporation income tax and thus carried no more than bookkeeping help to corporations other than ones with no net income. The corporation income tax *per se* has not been changed. It is in most part a "hidden" tax and on that and other grounds is objectionable. Any move towards getting rid of it will be wise.

A Neglected Subject.

The United States Shipping Board has been conducting hearings in different sections of the country on the question of developing and maintaining an American merchant marine. It would take a good sized ocean-going ship to hold all the matter that has been brought forth in similar hearings or like investigations during the last dozen years. If "hearings" and academic investigations could bring a merchant marine into existence we certainly should have the best in the world. But neither hearings constantly held and the nearly four billion dollars net which has been spent by the Government directly on the merchant marine since 1917 has achieved anything like an assured approach to the solution of the problem.

The board no doubt will report, as other "hearing" and investigating bodies have done hitherto, that we should have a merchant marine. To that everyone will agree—and then turn to something more interesting. The Shipping Board will continue to maintain and operate vessels, at a net annual loss of around $20,000,000, Congress will again debate the subject—and nothing further will be done. Meantime, the bulk of the fleet built by the Government during the war is rotting away, most of it unused and without any likelihood of ever being used. The quicker 90 per cent of the war-built vessels rot away and disappear the better it will be.

Theorists will continue to declare that the country must have a merchant marine equal to the carrying of at least 50 per cent of its foreign commerce. And by holding to that theoretical figure, the proportion of American foreign trade actually carried in foreign bottoms no doubt will continue to decline. The 50 per cent aim has been the statutory policy of the Government since the Merchant Marine Act of 1920 was passed, and, except as a far removed possibility, has proved to be little more than a dream.

The trouble is that the shipping problem has been left almost entirely to theorists, or to practicalists with hands reached towards the public treasury.

Despite their big stake in foreign trade, and consequent concern with ocean shipping, the average American, even the average American business man, gives less thought to the merchant marine problem than to the canalization of the planet Mars.

Gold Resuming Its Sway.

The move by the rulers of India towards changing the basis of that country's currency from silver to gold has focused thought on the mighty power still exercised by the yellow metal in the fiscal affairs of mankind. Adherence in India and China to silver as the prime basis of exchange has maintained a fair balance between the two historic currency metals and lessened the pressure made on gold because of its being the single standard among commercial nations of the West. If India changes to it, gold will be put under a greatly added pressure, and no doubt will increase in value with possibly a radical lowering of prices throughout the world.

War time financing, the extraordinary flood of gold into the United States, with the multiplying of paper currencies abroad,—that is all-'round empirical inflation—has tended towards obscuring the yellow metal as the ultimate barometer of all exchange. The production of gold has not increased in ratio with advance in prices during the last fifteen years and the decrease in the general price level in recent years has owed no doubt to gold's inevitable reasserting of its sway. Gold evidently has not yet come back entirely into its own, even in Western affairs, as shown by the fact that the price level of all commodities continues to trend downward. This trend will be accelerated and carried perhaps further than it otherwise would go if India discards silver in favor of gold. For that is a big country, peopled by some 300,000,000 people given to the hoarding of precious metals.

It is time for economists to begin giving thought to the relation between current and prospective production of gold and the demand for that metal. A good many have worked out pretty theories for the abandonment of gold as a medium of exchange and for curbing it as the ultimate fixer of price levels. The achievement of either is probably in the far distance.

Is the Middle Man Passing?

No link in the distributive system has been pounded more by the present generation, in its forays into economics, than that represented by the middleman, such as the jobber and wholesaler. Perhaps on the whole the most capable of distributing factors, and for long a necessity, it now appears that he is diminishing, and possibly passing. That aristocrat of distribution, the broker, probably is gaining.

The elimination of the middleman who buys and stores and sells on his own account or as the agent of producers seems to be presaged by the development of processes which put the retailer, and often the consumer, in direct buying touch with the producer. Among the most potential of these is the chain store, which does its own wholesaling, and cooperative buying by groups of individual retailers. Others are the department store, now frequently a part of big chains, and the mail order houses. The department store is probably static, maybe receding; traffic conditions appear to be forestalling its further growth as an institu-

tion which once seemed to be on the way towards supremacy in the field of merchandising. But the chain store and the mail order house have grown phenomenally and are still advancing.

More and more producers in some lines are setting up connections direct with consumers, thus eliminating both wholesaler and retailer.

The faults and the takings of the middleman have been much exaggerated by many critics of the prevailing system of distribution. This is perhaps because of his being theoretically superfluous, though no doubt practically necessary under conditions prevailing.

In criticising him, sight was lost of the most attackable factor in the distributing system. This is the one represented by the retailer, who, being practically and theoretically necessary, has been assumed to be satisfactory. In truth, he on the whole is the most inefficient of all distributing agencies; one reason for this is that there are entirely too many of him. When it becomes settled that the force of circumstances is solving the middleman problem, then the public's eyes may turn on the retailer with possibly many good results.

The Mill Testing Laboratory

BY R. A. SONIAMAN.

One of the first questions, very likely, that a keen business man will ask is: does a testing laboratory pay?

The writer is quite confident that every progressively practical mill man who understandingly and with open mind reads this article will admit that it does pay. Particularly so in mills which are growing rapidly, or in those amalgamations of cotton mills which are now becoming more and more frequent; for the very size of these places makes it impossible for the management to maintain that closely intimate contact with manufacturing process enjoyed by the smaller shops.

Textile mills, generally, can be roughly divided into three classes: those who have no testing laboratory to speak of at all; those who do have a little equipment along this line; and finally the class who have a more or less fully fitted up laboratory for testing their product and the various materials that go into the making of it.

The first class probably never do any more testing than is actually necessary to get an idea of what is going through the machinery. Once the sizings have been ascertained little is done to follow them up. Indeed, the writer has been in some of these mills and has found the few testing devices owned by the mill stored in out of the way places, and almost unrecognizable under a coating of dust and fly waste.

In the second class, a better approach to following up the sizes at the various processes takes place. Generally speaking, however, the testing is left to indifferent and irresponsible persons who often have not the slightest inkling of the importance of their work.

As an instance of this: A mill received complaints about the extreme variation in one of its best selling numbers. The superintendent would not believe that the variations were as cited by the customer and reached for the sizing sheets of the preceding month or so. The sizings were remarkably even! Very pleasing to the eye. The management, however, insisted on an immediate investigation and it was then disclosed that the clerk who did the sizing had not made an actual sizing in months. Every entry had been faked! He put in just enough variation to deceive everyone who took the trouble to look over his reports. And what was more remarkable, no one apparently had checked up his sizings. A peculiar case, but true; and not so rare in mill experience either, if the whole truth were only known.

The third and last class of mills have a more or less well organized testing laboratory and carry on their work in accordance with the needs dictated by experience and the ideas of the management. A mill expert after a recent tour, north and south, of mills which had test labs remarked that the ideas of what such a department should be and do were as many as the types of automobiles now on the market. Nevertheless, these mills are on the right road.

Now since the practices of these three groups may be assumed as the criteria of the opinions of the owners or manager, it may be inferred that the men in charge of the first two groups are either unfamiliar with the possibilities of the laboratory or have never given it the serious investigation and consideration that it deserves.

It is, frankly speaking, the intention in this discussion to show that the testing laboratory has a very definite place in the organization of every growing and going concern.

The first step, then, will be to set forth the object of a testing laboratory. Concisely stated, it is the testing of the product of an establishment in the various stages of manufacture. This is the primary object; however, progressive concerns have developed an important secondary profitable field of activity: that of testing their supplies—greases, oils, bobbins, dyes, and so on.

While there is no intention here to say categorically just how complete a testing outfit a mill should have (that being left for each mill to work out for itself), it may be said that, ordinarily, a yarn mill laboratory would require: a roving reel, sizing reel, sizing scale, lea strength tester, tabulated sizing boards, blackboard outfit, necessary printed forms for consistent recording of data collected, and a single thread tester; whereas a more extended equipment would include a scale for weighing laps, oven for testing moisture content of cotton and yarn, colorimeter, chemical testing apparatus, stereopticon machine, motion picture machine, and so on.

Taking up the matter of testing the product in the course of making, it should be said that a testing laboratory properly organized is an absolutely disinterested part of the plant. It has no favorites, treats each and every person, section, room, or mill, equally alike, its whole aim being to set forth the truth, and the truth alone, finally and impartially.

This fact can be utilized in establishing the standards of the mill. Some mills are very lax in this matter, there being no hard and fast figure which the mill endeavors to approach and maintain as nearly as it is possible to do.

Using a yarn mill to illustrate the working of a testing laboratory, it may be assumed that the sizing of the finished yarn is a matter of superlative importance to both manufacturer and consumer. Certain standards then must be

evolved as to the counts or numbers of the yarn and the permissible variation on either side of this so-called standard.

Right here is where the laboratory comes in. Well organized, and with the personnel thoroughly trained, there will be found an accuracy, a uniformity in the methods of making tests that are seldom attainable in the mill under ordinary conditions.

Take, for example, the tension on the cops or spinning frame bobbins during sizing. This may vary considerably, room for room, in the mills, depending a good deal on the ideas of the person doing the sizing; but in a laboratory, the operative responsible for the sizing has been so well trained regarding the importance of uniform tension that he or she will instinctively—subconsciously if you will—follow the course laid out as correct. Consequently, the sizings can be depended upon as being as nearly accurate, day after day, as it is humanly possible to get them.

In this matter of yarn sizings, it is astonishing to note the wide variations that exist in the yarns of even some of the most widely known yarn makers. One hears and reads so much about certain mills making a yarn that varies by only so and so much either way, and one marvels how the mill can keep the number within such narrow confines. Or perhaps an enthusiastic superintendent will give lengthy statistics showing the sizing sheets of his clerks for this month or that month. Yet, sad to relate, the writer has seen many a mill man's pet balloon—uniform sizings—punctured when the yarn was tested in a modern testing laboratory.

Understand! It is not intended to say that the superintendent or manager deliberately misrepresented actual facts. To the contrary! As said before, the increasing size of mills today, the tendency to incorporate among smaller mills, make it a physical imposibility for the superintendent or manager to follow up all the details of mill work.

And quite naturally, the overseer is anxious that his product show as consistent a uniformity as possible. This anxiety gives voice to displeasure—a razzing, if you will—which often is vented on more or less innocent heads. And the result is that the person who does the sizing yields to the psychological factor of suggestion and more or less unconsciously tends to get results that bear the stamp of uniformity. To state the matter simply: the person so sizing is an interested person; he wants to get certain results and tries hard to get them, even though the circumstances would ordinarily be unfavorable to the consummation of their attainment.

The workers in the laboratory, on the other hand, are absolutely detached from the influence of the overseer who makes the yarn and as a result only the cold facts of actuality are recorded. The figures are there for any one to prove or disprove, if he wishes to try.

Corporations having mills separated from one another but doing identical yarns will find the laboratory of value in ascertaining the precision with which the several mills are maintaining the standard.

It will also be found that the testing laboratory can be successfully used as a fault reducer in that by showing up the faults, tabulating them, and the machines on which the faults were made or passed, a campaign can be conducted to reduce such faults and thereby improve the quality of the product. This item alone should be of inestimable value to those plants who are forced to make quality a paramount issue because of the keenness of competition.

The laboratory may be used as the Sherlock Holmes of the plant, ferreting out the causes of the undesirable situations arising in the manufacture of cotton yarns. It not only serves well in this capacity but tends also to act as a check, a flywheel, on the entire plant. It may be made the pulse of the concern, showing to the experienced eye of the manager just what the condition of the mill really is. It is a crystal gazing glass, with the difference that it can always be depended upon to prognosticate exactly the events that are taking place.

One of the most annoying occurrences incidental to mill work is the misinterpretation of a carefully conducted test. Difficult as it may be to correctly carry it out in the various processes it undergoes, yet how deplorable— to phrase it mildly—when the results are mishandled, mismanaged, and misrepresented by an incompetent person or persons after it is in the finished stage.

All of this inefficient handling of the analysis of the product, of the tests and experiments can be obviated by a competent testing laboratory worker.

Suppose that a test is carried on to try out a scheme for the improvement of the quality of the goods—a factor which if successful is expected will cause a decided upward surge in the graphic curve of sales—an improvement in quality to be effected without an increase in the manufacturing cost. Obviously, it is absolutely necessary that the tests for size, strength, uniformity, appearance, and other points should be properly gaged. Everything depends on the results of the finished material!

To cite a specific instance: a large firm had been manufacturing a certain yarn from a certain grade of Egyptian for years. Competitors caused this concern considerable anxiety on account of the way they consistently inaugurated considerable reductions in the market price of their goods.

The question of a change in the policy of mixing had been discussed pro and con for an extended period of time without any immediate action taking place; for it seemed that a test along this line some years previously had shown rather adverse results. However, a test laboratory springing from a modest beginning had gradually grown like an excrescence on the body of the mill corporation, and it was finally decided to make extensive and intensive tests of competitors products and their own, comparing the results, with the view of finding a way of successfully meeting the lower prices of the rival concerns.

To condense the story of a long hard-fought struggle into a few words, success far beyond the most sanguine hopes of any member of the management followed. Due to the careful execution and analysis of tests conducted by the testing laboratory, a mixing much cheaper than was originally intended was found entirely satisfactory; one process of drawing was eliminated; a longer draft layout was inaugurated; and the finished material was even then, if anything, slightly superior to the goods of the competitors.

Sales showed a gratifying increase after the price had been substantially cut, and the added profits of the concern were a glowing—golden—testimony to the efficacy of the laboratory which had so splendidly come to the rescue.

[A second article on the mill laboratory by Mr. Soniaman will follow in an early issue.—The Editors.]

Scientific Trends with a Textile Slant

It is good business to have a reliable organization behind any sales policy. The surest way to count on this is to have them working *with* you. Men will make an additional effort to give you the extra ounce of service when they are sure you are doing every possible thing for their safety, comfort and help.

It is not, then, paternalism, to work for high standards of working conditions in process rooms. The freedom of safe machinery, of protected working spaces, and of clean atmosphere gives assurance to men that they do not have to watch all these things themselves.

It is entirely foolish to be despondent about the viewpoint or the acts of anyone else. Just when you have seen a succession of instances of shockingly bad management, and just when you believe you have encountered a section of territory where such things are the rule, you will run across one outstandingly fine thing that makes you realize the real greatness of consistent adherence to and work for an ideal.

Just how an "Increasing Purpose" of improvement may become a vital force in the production of the ultimate in dividends is worth analysis. The contribution it makes to the various factors of sound engineering management furnishes a guide to the production of similar results.

In the plant discussed below one motive, that of "better working conditions" furnished some of the best reasons for increased dividends.

The installation of automatic means to clean rooms, remove dust, and allay possible germ conditions is, then, good business, realized directly in proportion as it creates confidence, in the working force, of its permanence and service to them.

• • •

Not all, by any means, of engineering is described in text books. Some of the very best is that which is able to undertake the study of control of steam drying and the cleaning of cotton from the bale, with a view to producing safe slashers to work on and cotton in the card room that is free from dust. You will notice that the *objective* of both of these efforts is to procure safe and decent working conditions, yet the *result* is employment of a type of engineering skill to the end of more efficient mill operation that may easily excite the envy of the most famous mill engineer.

In the case in mind the plan and its execution was the work of a superintendent with a vision—a vision big enough to include in its scope both humanitarian and profit objectives. Hats off to managers of this type, and let us who are trained engineers pray for the vision to build as well and the skill to carry it through.

• • •

The cotton industry is just beginning to wake up to the advantages of automatic control of processes, and to employ it to profitable result in the making of better quality. The increase of spindle capacity in new mills, and the addition of finer grades of weaving and of finishing to many of the mills that used to do only one line of work, add burdens to management that can be very much lightened by the proper employment of these reliable servants of management.

Superflous elements of process are eliminated, operating cost is reduced, and quality is improved and standardized by this means. Then—and this is of utmost importance—a new and reliable factor is added to management by ability to make use of control technique.

We see, then, that the standard of production and mill-management has been raised by the man who undertook these *new* things—to improve working conditions. It looks as if a study of the humanities paid.

• • •

One of the most hopeful machinery developments we have seen is an opener which eliminates a high percentage of dust while performing its usual function. It has much more to its credit than the undoubted benefit of removing dust from the carding operation. Of course anyone knows that even minute particles of dust are able to effect a wear and tear on a process machine that is persistent and powerful in its total effect.

In the same way, regardless of the power argument for or against this principle, individual motor drives on such machinery as spinning frames, to my mind, eliminates the annoying and costly belt, oil and "fixing" maintenance expense, a crew, by the way, of which few mills know how to regulate the personnel in such a way as to keep them a smoothly functioning part of the organization.

Yet dustless openers are "health considerations" and individual motor drives preclude a lot of "safety engineering."

• • •

Anything in a mill which eliminates causes of hazard, depreciation and repair, adds several factors to management economy. Accidents, rapidly worn machinery, and dust-clogged fiber-making processes cost money which must be shown on the "expense" column of the books.

A mill manager is rated, in the cotton industry, by his economy of management, and his book balance, regardless of a lot of other things we might discuss.

Engineering treatment and completion of any of the types of work mentioned will show a gain in the profit over the expense, increasing with the passage of years. The make-shift method costs nothing the first year and anything in the years thereafter. The sound engineering method, which is also both the "safety" and "welfare" method costs something the first year, then you can forget about it.

• • •

I asked my manager friend what his mill gained by a uniform record of quality. He said: "We get the preference in orders, and are able, even in a tight market, to ask for and secure certain price advantages." (All that this sermon needs is a statement of the text.)

But, you can get uniform quality ONLY when you have a plant whose *collective* efficiency is high, and you can't skip or forget about the importance of a single operation.

When a mill manager pays such infinite attention to detail in making a good working condition that he plants a flower garden to eliminate unpleasant yard dust, then he rates as an engineer of the first order. Attention to detail has been the secret of most of the great progress of American industry.

Not only that, but you see from the foregoing that efficiency, good engineering, new skill, better equipment, better management, sound economies and a number of other things are the product of a humane motive. It calls to my mind an ancient statement about the test of one's faith, for these are, indeed, "the fruits of the Spirit."

How the World's Work was Done Before Factories Began

BY L. H. HODGES AND H. L. HERRING.

The article below is one of a series which has to do with the fundamentals of business, or, more properly known as Industrial Economics. These articles are being published from month to month. Each one is a unit in itself, although forming an integral part of the entire series.

Practical mill men like practical material and these articles are designed to meet the needs of textile operating executives of the South who are interested in knowing more about the laws governing business and industry. The entire series has already been used by a large cotton mill organization in the South in its educational work, and this organization found the material to be very practical and effective.

Each article lends itself to discussion by groups of mill men, as well as being helpful and interesting reading. Naturally the articles are brief and in attempting to cover this large field, only the most important points have been considered.

The modern economic organization for the supplying of our wants is very complex. Indeed it is very difficult to understand why such an involved system as we have today *is*, unless we start our study of the way business was carried on back in the time when wants were fewer and the system for supplying them was correspondingly simpler. By doing this we can see how additions to the complexity of business were made to meet needs. Such an historical sketch will be interesting in explaining the hang-overs from earlier systems which prevail in our own time. A third and equally important reason for a brief study of the past is to help us to adjust our minds to the fact that the changes that are constantly taking place are part of the age-long experience of the race. The question is not, will our present institutions change?—they surely will; they are changing before our eyes. The question is: What direction will the change take?

I. Primitive Economy.

In primitive times man accepted what the gods provided. He reaped the products of nature without contributing anything but the bare labor of reaping. The Indian of a few generations ago, hunting and fishing; the South Sea Islander of today with his straw hut and untended banana and cocoanut palms providing his food; the Eskimo with his snow house and animals for food, clothes, and fuel to be had for the killing; these are examples of the way all men once lived.

When nature was bountiful man lived in a veritable Eden. But it generally was niggardly so that man early had to begin to struggle for a living. In this struggle only the one able to combat animals and other men and diseases survived and he because he was strong, crafty, alert and suspicious.

II. Family Economy.

The dangers and uncertainties of this mode of living were early lessened by the addition of labor to aid nature. Man became a keeper of flocks and herds and with his family and his tribe—the enlarged family—accumulated capital in the form of larger flocks. Land then began to have some slight value as a possession of the whole tribe in order to secure sufficient grazing. Economists and historians call this Pastoral Economy.

About the same time, or soon after, man began aiding nature by tilling the soil. Because agriculture supplied so many more needs and was capable of a more concentrated development and efficient production than cattle raising, agriculture far outran the pastoral system. Capital was represented by land—the more productive land being more sought after—by rude tools and by a few domestic animals. Labor was done by the owner and his family and his slaves. What they made, they ate and wore and used, and did without the rest, perhaps to be more exact, they did not have many other wants.

III. The Medieval System.

Before the year 1000 Western Europe had developed an agricultural organization for economic and military purposes with the manor as the unit. We shall take England as an example because it was typical and because it contributed most to our own economic system.

Custom the Law.

About nine-tenths of the people of England lived on estates or manors averaging 5,000 acres. This land was held by some noble from the king and was tilled mainly by serfs or "villeins." While the villein was not a slave, he probably had been some generations back and had some characteristics of the slave in that he belonged to the land he lived on, was obliged to stay where he was born and could not neglect his customary work. He did not own the land he cultivated but was entitled to it by usage and could not be deprived of it. His children inherited his rights to it along with the obligation to follow his occupation. While there were some free tenants who could move about if they chose, the vast majority of men were bound to the soil.

For this land the tenants paid rent "in kind"; that is, part of their produce at harvest or in the form of gifts at special seasons or events. It might be so many eggs in Spring or so many fowls at a certain feast day or at the marriage of the lord's son or a little money at the marriage of his daughter for her dowry. Mainly, however, payment was made in the form of labor in the lord's fields, so many days a week all year and so many continuous weeks at planting or harvest. All these payments in kind and labor had grown elaborate by usage and custom.

Cooperation In Work and Protection.

Instead of each tenant having separate fields or a small farm and living on it, all lived huddled together near the lord's house in miserable houses making up a filthy, unsanitary little village. This was for protection from the casual robber and to be near the lord's stronger house in case of war between lords, and also to be near his court where all manorial cases were tried. The arable land was divided up into three great fields hundreds of acres in extent. These were divided into broad strips or furlongs, which were still further divided into acre and half-acre plots. Each tenant held a number, usually 30, of these little acre plots scattered all over the three fields so as to get some of all qualities of the land and all sorts of crops. One big field was planted in the Fall and harvested in the Summer, one planted in Spring and harvested in Fall and the third lay fallow for rotation. Grains were almost the only crops. Cooperative work in the fields was the rule with its methods handed down from generation to generation with no opportunity for experiment or initiative.

The manor was almost entirely self-sufficient. If the seasons were bad or if there were quarrels between neighboring lords and the fields were ravaged, the inhabitants faced famine or at least reduced food. They had no money to buy from other manors, even if these had had a surplus to dispose of; nor means of transportation over any considerable distance, or even the means of finding out where such a surplus might exist.

If the crops were good they had a small surplus which they hauled to the nearest town to trade at the fairs for salt, iron, tar, or a millstone. Barter was the chief form of trade. Money was scarce, especially among the lower classes and was little needed, though free tenants seem to have paid rents in money and a villein might buy his freedom by accumulating a little money.

B. The Guild System.. 1. The Merchant Guild.

Contemporaneous with the development of the manorial system on the land was the guild system in the towns. These towns sometimes were manorial villages grown larger from being situated advantageously for trade: some grew up at breaks in transportation, that is fords or places where goods were changed from the crude river barges to packs and wagons; others grew up around forts or legal centers where courts were held or taxes collected, and therefore provided opportunities for trade. The population was largely recruited from the class of freemen and freed villeins from the manors and these people sometimes continued to farm part of the time.

All the traders in a town were organized into a Merchant Guild, at first for fraternal purposes, later for controlling the manufacturing and selling in the town. The Guild in a town had a monopoly on all the trading and regulated it by elaborate rules and taxes and tolls. It regulated weights and measures, set up standards of quality, and prohibited such things as speculation. It looked after its members somewhat as fraternal orders do now, presented spectacular pageants and plays and was the center of the social and civic life of the town—almost the town government and the chamber of commerce in one.

2. The Craft Guilds.

In the earlier days of the merchant guilds, trader and craftsman were often one and the same. Perhaps most traders bought or raised their raw material, worked it up and sold it, thereby uniting the entire productive process in one man. For about a hundred years this worked but with the general expansion of trade and the increase in the number of crafts, certain groups would find that they had special interests of their own apart from those of the general merchant guild. And so the weavers, armorers, parchment makers, or drapers, fullers, potters, carpenters, saddlers, joiners, etc., tended to form craft guilds.

A craft guild regulated the same sort of things that the merchant guild did and many more. It regulated hours of labor, prohibiting night work because the worker could not do his work well in the poor light and because the guild warden could not inspect the work properly; it stipulated methods of trading and display of wares. One of its greatest fields of regulation was the question of membership in the guild. The eldest son of a guildman inherited his father's rights as a guildsman, others entered in it by the payment of fees or by serving an apprenticeship. In this way the guild controlled the number in the craft in any town and tended toward a monopoly of the trade.

Apprentice System.

The apprenticeship system of the craft guilds was practically the entire system of education for the youth of its day. The apprentice was bound to the master craftsman, usually for a period of seven years, during which he was a member of the master's household and under the master's control in all phases of his life—even his dress. He got instructions in the manual skill of the trade, in its purchasing and marketing problems, and in the proper relationship to the guild. The last was real instruction in citizenship, for to the medieval craftsman his guild was his government in all the closer relations of that institution.

After his apprenticeship was over the young man became a journeyman and after more experience, or with the accumulation of capital or fees and the setting up of a shop of his own, became a master craftsman, with a journeyman or two or at least an apprentice or so, or both, working for him. His shop was usually a room in his house or near it. He raised or bought up his material, made or purchased from other craftsmen his simple tools and *manufactured* (the original meaning of the word is "made by hand") his products. Usually he worked to order but sometimes made up a supply to take to a fair or to market where he sold them himself largely to people known to him personally. In this way, quite apart from the quality regulation of his guild, a workman was held to a high standard of work by his interest in further orders.

IV. The Domestic System.

Many things tended to hasten the natural changes from the medieval, manorial and guild systems.

1. The Crusades—expeditions to rescue the Holy Land from heathens—caused better acquaintance and more trade between all European countries. These were followed by the great discoveries of America and a sea route to India. As man learned of new things he wanted more of them and so he tried to produce a greater surplus in order to be able to satisfy these new wants.

2. The Black Death, the worst of all the medieval plagues, reduced the population greatly. Labor became dear, money payment of wages instead of the old rent system broke down the villein class restrictions so that they became gradually entirely free. High cost of labor and a demand all over Europe for English Wool changed agriculture from grain raising, which required lots of labor, to sheep raising, which required little. Nobles and all others who were able to take advantage of the opportunity, "enclosed" the old open fields with hedges and fences for sheep runs. Private property in land was thus instituted.

3. The Reformation movement resulted in the confiscation of property devoted to religious purposes, and as most guilds had some such objects, they lost heavily.

4. Guilds had grown rich from monopoly control of the trades and in their desire to continue and increase this monopoly they became arbitrary in their rules. They made membership requirements burdensome and entrance difficult.

On account of all these things indirectly but immediately because of the last, the guilds began to decline in favor of the "domestic system" or the "putting out" system. One of the best examples of this system occurred in the cloth-making industry because of the stimulus of foreign demand for English woolen cloth. For a while wool was

exported to France or Flanders, but soon those weavers and fullers, etc., began coming to England to work up the raw wool. The expansion of the manufacture by these foreigners and such natives as wanted to enter it moved to the rural districts to avoid the control of the guilds.

The First Middleman.

The central figure of this system was the *Clothier*. He was an organizing specialist who accomplished the whole process of manufacturing and the now more complicated process of selling in foreign markets. He raised or bought the wool, delivered it to the spinner, then the spun yarn to the weaver, the cloth to the dyer, the fuller, the shearer, the dresser and finally sold the finished product. He retained the ownership of the product all the way through the manufacturing processes and paid each artisan wages. The artisan did his work in his own home or shop and owned his own tools, and could work when and as long as he wished.

The clothier was the first organizer of labor and capital, and the first middleman. Upon his efficiency the welfare of the whole community might depend. Under his initiative were exploited the new markets which a broader knowledge of other lands was constantly opening.

V. The Rise of Specialized Middlemen.

In the two hundred years from 1550 to 1750, while this new specializing in manufacturing and marketing was developing, trade and commerce were further aided by the rise of certain middlemen who specialized in services to the trader. Among these were bankers, risk takers who insured cargoes, carriers such as stage coach lines and wagoners, inns and taverns, and private postal service systems. Perhaps the bankers need further explanation because of the relation to modern banking and because of the relation to a theory of national economy of that day.

The first bankers were goldsmiths who had to keep a certain amount of the precious metals on hand all the time for their trade and had strong boxes to keep it in. Gradually people began to deposit their money with them for safekeeping. The goldsmith found that since everybody would not call for gold at once he could lend some of it out at interest and still be able to meet all the day-to-day calls of the people who had left money in his charge.

As travel was so precarious and there was so much danger of being robbed, and gold in large quantities is inconvenient to carry, merchants and travelers began to deposit gold with the smith in one town, get a note to that effect which could be presented to the smith in another town with whom the first had an "understanding" and get the money. These understandings probably grew out of guild relations between towns. When trade quickened and went to foreign lands this convenience was even more necessary and understandings "followed the flag," as we would say now-a-days.

Indeed so profitable did the banking end of the business become that many smiths ceased their former trade entirely and devoted all their time to the banking.

VI. The Mercantile System.

Just as now in banking, the discounts of one goldsmith against another, and of one country against another, came near balancing each other so that there was little need of shipping actual gold. Whenever this was necessary, however, the strong, new national spirit that was developing in all nations was touched in its pride. People felt that a sure index of the increase in wealth of a nation was its increasing supply of gold and silver. It was almost a national calamity to have a "balance of trade" against it so that gold must be shipped out. Out of this idea grew a national policy toward trade called the Mercantile System, and nations laid tariffs on imports and paid bounties on exports in their endeavor to keep gold at home.

All the changes in ideas toward the business of making a living cover a great many centuries of slow progress of man in his struggle for existence. It will be noted that as we approach modern times changes are faster than before when hundreds of years were taken up with the rise and passing of some economic order. From 1750 to our own day the rate of acceleration has been even faster, with the application of power and the rise of the factory system.

Questions.

1. What wants does man now satisfy from nature without contributing something himself (i. e., free goods).

2. Are our cattle ranches in the West and cattle raising in the mountains of the South examples of pastoral economy? Why, or why not?

3. In what respects were the southern slave plantations like the manorial system? Were there any features of the guild system? Do we have several agricultural classes in the United States now? Name them.

4. Do we have unidentified production today? What is the function of trade marks?

5. What agencies have taken over the work formerly done by the apprenticeship system in training for a job? For citizenship?

COTTON CHATTER

By Chatterer

When you stop
And give a thought
The superintendent
And the overseers
Have a chance
To get revenge
On any help
Against whom they might
Have a grudge
In many ways.
It is the test
Of real men
Who will not
Let their feelings
Get the best
Of their judgment
And instead
Will try
To deal fairly
With every one
Without regard
To animosity
They might have
Against the help.

Towels and Toweling

BY T. WOODHOUSE AND A. BRAND.

Dobbies.

A large proportion of the towels and toweling in general use is woven with the aid of one or other of the numerous forms of dobby now available. The many forms of this kind of shedding mechanism include both negative and positive types, single lift and double lift, and with different varieties of shedding, e.g., bottom closed shedding, center closed shedding and open shedding, while a type of semi-open shedding is sometimes arranged. From a general point of view, much could be written on these interesting mechanisms, but the purpose of the present series of articles will be served by a brief discussion of the more important types commonly used in the production of towels and toweling.

Figure 135 illustrates a negative dobby, or, as it is sometimes termed, a non-positive dobby. It is of the double-lift type, motion being given to the T-lever actuating the horizontal drawing knives by a connecting rod and crank fixed to the low or bottom shaft of the loom.

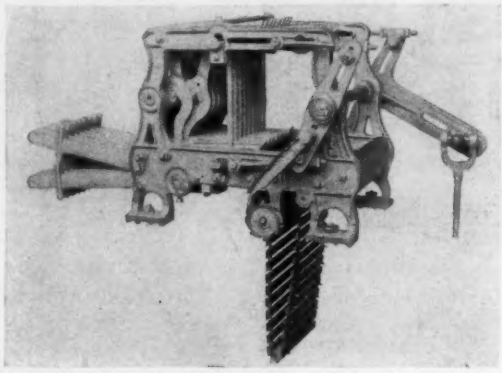

Fig. 135.

The dobby is suitable for looms up to 47 inches reed-space (rather wider than is usually necessary for toweling), and is built in various sizes capable of controlling any number of harnesses up to 40. To facilitate the repair of broken warp threads, it is fitted with a harness leveling device. The jack's are controlled by means of the usual wooden lags, pegged to suit the pattern being produced, but the indicating mechanism can be adapted to suit paper cards if these are preferred. For the manufacture of towels with cross-borders or headings, motions may be added to produce two or more distinct designs in the fabric without the necessity of stopping the loom.

Figure 136 illustrates Ward's patent dobby. It also is of the double-lift, non-positive type, and is fitted with the maker's patent towel motion for the production of fancy or colored cross-borders in Turkish (terry) and other varieties of toweling. This motion is non-positive, but has the advantage of being simple to operate when it is necessary to change the order of weaving. One barrel or cylinder carries the set of lags for the body of the fabric, while another cylinder carries a different set of lags for the cross-border pattern. To take one set of lags out of action and put the other set into working position is effected by pulling the handle, clearly seen in the illustration, either to the right or to the left, according to which cylinder happens to be in action at the time. This dobby is made to control up to 40 harnesses in the ordinary fine pitch, or up to 24 harnesses in a specially coarse pitch adapted for heavy fabrics.

Many towels, chiefly the finer makes of face-towels, and the variety known as guest-towels are woven with more or less elaborate dice designs developed in sateen weaves. The 5-thread weaves are most commonly used, but occasionally are also found the 4-thread, 6-thread, and 8-thread forms of the weave. By the usual processes of

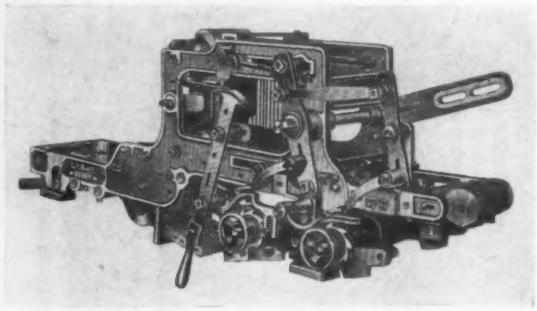

Fig. 136.

weaving with the aid of a dobby, the complexity of the design is limited very strictly by the capacity of the dobby as regards the number of harnesses controlled, and the more elaborate designs are often only possible with an intricate order of drafting. Hence, many such fabrics are produced with the aid of a jacquard, which is admittedly a more expensive method of production. But, whether a dobby or jacquard is employed for such fabrics, changes in the design result in heavy overhead expenses.

Whichever method of shedding is adopted, dobby or jacquard, according to the requirements of the design and considerations of expediency, considerable expense is involved in the preparation of the lags or cards, particularly if a number of looms is to be engaged in the work of production. When the fabrics are to have cross-borders or headings, this expense is considerably increased, as the cross-border design is almost invariably quite distinct from the design in the body of the fabric, and a second set of lags or cards is necessary for each loom.

The methods of bringing the second set of cards or lags into operation vary considerably. Use may be made of a towel motion such as that described above in connection with Fig. 136, when the body pattern lags and the cross-border lags are carried on their respective cylinders, and brought alternately into action by hand as required. Occasionally the dobby or jacquard has one cylinder only, in which case the body pattern lags or cards must be removed and substituted by the cross-border pattern lags or cards. This procedure is, to say the least, inconvenient, as the loom must be stopped (and production lost for the time being) while the change is being made. Further, there are loopholes for error in the time, and in the act of changing. Sometimes cards with two rows of

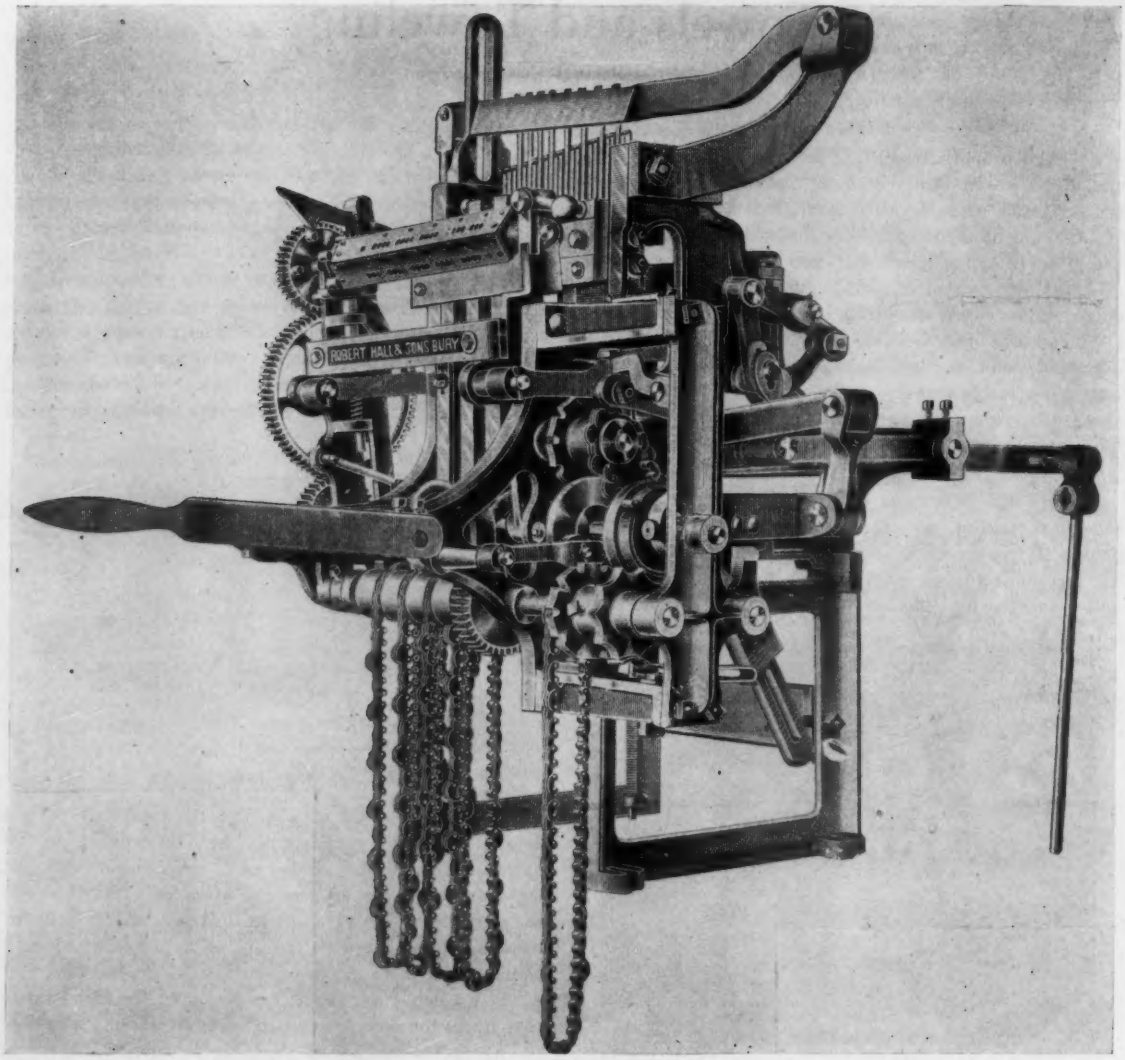

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Fig. 137.

holes are used, one row being arranged for the body of the fabric, and the other for the cross-border, and the change from the use of one row to the other is accomplished manually. This system is, of course, open to many of the objections already indicated.

In addition to the foregoing methods, automatic cross-border dobbies may be employed, or, when necessary or advisable, cross-border jacquards. In the automatic cross-border dobby, the possible errors due to the intervention of the human element are eliminated by the use of a third cylinder, which is provided to carry a set of control lags, the pegging of which, in conjunction with a peg on the last lag of the border and center cards determines the number of repeats of each set of lags and also determines which of the two pattern cylinders is to be in operation. In several designs of these particular mechanisms, provision is also made for reversing the normal direction of rotation of the cylinders. This has the effect of considerably reducing the number of lags required for certain types of patterns.

Many of the difficulties and complexities met with in the production of the dice designs referred to can be overcome by the use of the Terfloth patent "cardless" dobby, illustrated in Fig. 137. This dobby dispenses entirely with the use of stamped cards or pegged lags, and enables complex dice designs and cross-border effects—with any reasonable lengths of ground and border—to be produced quite automatically. In addition, it is a relatively simple matter to alter the design being produced.

In the case of a 25-harness dobby of this type weaving 5-thread sateen warp and filling effects, it is possible to obtain up to 120 different arrangements (not necessarily 120 different patterns), while the change from one design to any other design of the range occupies about one minute. This presupposes that it is unnecessary to alter the draft of the harnesses, but, if the draft is altered, it is possible to produce another set of patterns equal in number to those obtained by the original draft, and quite distinct.

The Terfloth dobby is made in various sizes to control from 10 to 25 harnesses, and either with or without a cross-border motion. In addition, by means of a simple

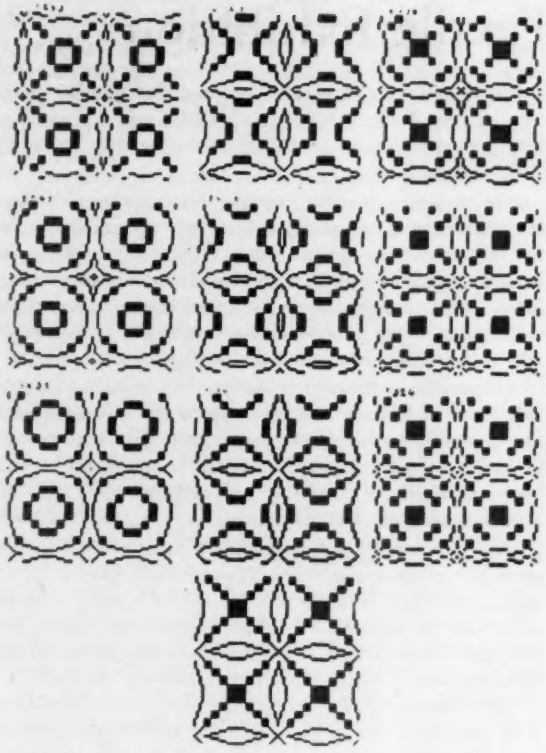

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Fig. 138.

mechanical device, the dobby can be reversed for any number of picks after the filling has broken or the supply in the shuttle is exhausted, in order to obviate any break in the design.

Figure 138 shows ten different designs of the type of dice pattern capable of being produced on this dobby. All these designs are of the 4-division type, and a close examination of the illustration will show that all the ten designs are composed of different arrangements of the same four divisions. If developed in the 5-thread sateen weaves, 4x5 or 20 harnesses would be necessary with an ordinary dobby, and the pattern chain would be composed of 155 cards or lags. Further, a complex order of drafting would be necessary.

In the automatic cardless dobby illustrated in Fig. 137, the cards or lags of the ordinary dobby are replaced by a series of chains composed of high and low links. In the case under discussion, the same number of harnesses and the same draft would be employed, but one pattern chain would control 5 harnesses, so that 20 ÷ 5, or 4 chains would be necessary. Further, since there are 5 picks in the unit weaves, each link in the chain controls the shedding mechanism for 5 picks and it is only necessary to move the chain once every 5 picks. Hence, the number of links in each chain would be 155 ÷ 5 = 31 links. So that 4 chains of 31 links each, or 124 links in all, will do the same work as 155 lags × 20 pegs = 3100 (including both pegged holes and blank holes) in an ordinary dobby.

All the ten designs reproduced in Fig. 138 can be woven with the same draft by altering the weaving plan, and this alteration can be effected very simply and very rapidly by changing the relative positions of the 4 chains. The corresponding operation with the ordinary dobby would involve the re-pegging of a complete set of 155 lags.

The designs shown in Fig. 138 are of the continuous or all-over type, and, unless the draft were arranged to suit, no special side or cross-border effect would be obtained. For piece-goods toweling, the method indicated would be quite satisfactory, but when separate complete towels are being produced, it is generally desired to have a cross-border effect, with or without side borders, so that the design of the complete towel is of a finished character. In the cardless dobby, as well as in the ordinary dobby, the side borders are produced by a special arrangement of the draft. In the ordinary dobby, the cross-border design is produced with the aid of a second set of lags or

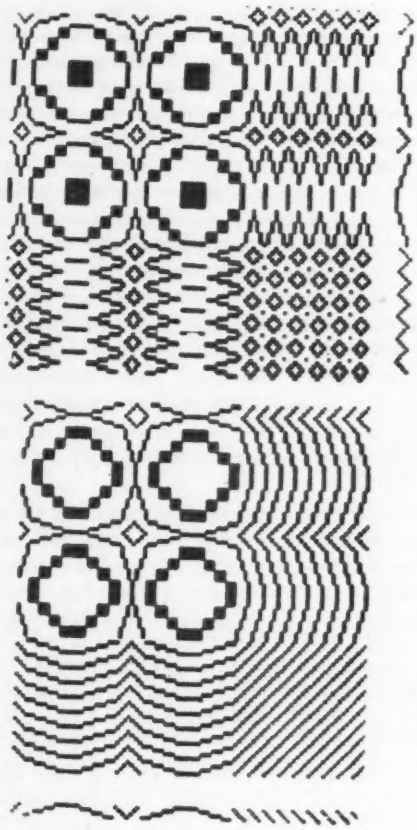

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Fig. 139.

cards, suitably pegged or cut. In the cardless dobby, similar means of producing the cross-border are employed. A special set of chains is used to control the movements of the harnesses during the operation of weaving the cross-border, and automatic means of determining the periods during which each particular set of chains is in operation may be provided.

Typical examples of the cross-border effects obtainable with this dobby are shown in Fig. 139. It may also be mentioned that, if the character of the complete design is suitable, the pattern chains may be made to move continuously in the normal direction, or to reverse the direction, as the design requires. This desirable feature, which enables the pattern chains to be kept at reasonable lengths even for long and intricate designs, is effected by introducing a special control chain, seen in the foreground of Fig. 137.

(*To be continued.*)

Seventh Southern Textile Exhibition

Success attended every feature of Textile Week in Greenville this year. Outstanding in magnitude and importance was the Seventh Southern Textile Exposition, which was held in Textile Hall during the week of November 1st to 6th inclusive. This Show, which has become a biennial institution in the southern textile industry, justified every prediction made for its interest and value and importance as a display of textile machinery and appliances, supplies and services pertaining thereto.

In a number of phases subject to description, each succeeding show presents practically the same features, and the chronicles of all of the expositions must be made along the same general lines—with the very important exception, which has prevailed with each of the seven shows thus far held, that the cumulative experience of the management has been utilized in gradually perfecting every detail of operation and in offering, in conjunction with the individual exhibitors, an improved exposition each time the textile interests turn their attention to Greenville for the bi-ennial week of contacts and examination of the products essential to the development of the industry.

It can be said unhesitatingly that the Seventh Southern Textile Exposition crowned fittingly the series up to this year. The exhibits were varied, they were of large number and of a scope which covered practically every phase of cotton manufacturing. The attendance of mill men was worthy of the show, and made the exhibit entirely justified to the exhibitors.

The larger manufacturers of equipment for the preparatory and spinning processes of cotton manufacture did not exhibit at the show, and, while this was noticeable to those attending the show with especial interest in these important features of mill equipment, it is rather definitely understood that at the next Greenville show, a number of these manufacturers will have extensive displays of equipment embodying all of the refinements and improvements adopted between the time of the Sixth Show and that in 1928.

With this general exception, however, the major exhibits were a commentary upon the broad tendencies in southern manufacture. Looms with modernized features, long-draft spinning, rayon, and other things bearing upon current trends were displayed and received their respective shares of interest.

The space made vacant by the absence of some of the larger equipment makers was utilized by an unprecedented number of exhibitors showing various and varied specialties of all kinds, which have become an important factor in the matter of producing dividends for mills.

The show was opened formally on Monday morning by President W. G. Sirrine, of the Textile Hall Corporation, and W. E. Beattie, president of the Greenville Chamber of Commerce, and a retired cotton manufacturer, made the official address of welcome. Welcoming the visitors, and discussing the value of the exposition, Mr. Beattie said in part:

"On behalf of the Greenville Chamber of Commerce, which represents nearly all of the business and professional men of Greenville including all of the cotton mills in this vicinity and a large number of ladies who belong to the woman's bureau, also several hundred young men, members of the Junior Chamber of Commerce, I extend a hearty welcome to the exhibitors at the Seventh Southern Textile Exposition.

"It has been stated by COTTON, the magazine published in Atlanta, in a recent issue that the exposition will be the largest and most varied display of textile machinery equipment and supplies ever seen anywhere, a striking indication of the realization by manufacturers throughout the country of the sales possibilities offered by the exposition to the textile industry of the South.

"Greenville is honored in having this exposition and I feel sure much benefit will accrue to the mill managers and especially to the operatives who will have opportunity to examine the latest improvement in textile machines and have explained to them the most approved methods of attaining the highest efficiency.

"On the other hand as probably three fourths of all machinery equipment and supplies being sold for the textile mills or additions is being sold for southern mills, it seems to me that the exposition furnishes an excellent medium for advertising improvements, inventions and all the various refinements which render modern machines so efficient.

"The cotton mills of Greenville, Spartanburg, Pickens and Anderson counties represent one half the total spindleage of South Carolina and Greenville is near the center of the Piedmont belt of North Carolina, South Carolina and Georgia which contains a large majority of all the cotton mills in the South. It seems to me that Greenville furnishes an ideal location for holding expositions of the things which pertain to cotton manufacturing and can justly claim to be the Textile Center of the South.

"Some seem to think that expositions have outgrown their usefulness, but is this true? Do they not furnish the most satisfactory method of advertising improvements and new constructions as well as enabling those who make and sell the machines and supplies to become personally acquainted with the actual users of the machines and supplies. The fact that 200 exhibitors from all parts of the United States have made exhibits is strong evidence that the exposition is regarded as a good means for advertising.

"It is an education to a large number of actual workers, men who have practical knowledge and who can ask intelligent and often helpful questions.

"Comparatively few can travel around and visit the large plants which build cotton mill machinery and supplies and talk with these builders, but at the expositions they often come in contact with the leaders in these shops and this personal contact is one of the most valuable results of the exposition."

W. G. Sirrine, president of the exposition company, was the recipient of universal congratulation upon the manner in which the show was operated. These honors were shared by Earle Mauldin, manager of the show, who, because of his successful management of previous expositions, was returned to Greenville to handle the exhibition this year. Miss Bertha M. Green, secretary of the exposition, was the efficient assistant of Mr. Mauldin in contacts with the exhibitors.

A spirit of utmost cooperation between the management

and those firms exhibiting was displayed in every particular. The exhibition committee received many constructive suggestions from the viewpoint of the exhibitors, which they accepted for earnest consideration in connection with future shows. Among these was the suggestion that, in view of the present efforts to extend the use of cotton goods, the decorative scheme for the booths might include the utilization of attractive southern mill products, such as denim, or dyed osnaburgs, or a scheme of pattern goods.

In addition to the main building, which was filled to capacity, an annex adjoining and connected with the hall also was crowded with exhibits. This was arranged in a most accessible manner and received equal attention with the spaces in the original structure.

Greenville's committees, and the several association officials, provided a comprehensive program of entertainment and benefit for the week, aside from the exposition itself. The chief social feature was the schedule of dances held in the Ball Room of the new Poinsett Hotel. A "Cotton Ball" on Tuesday evening, sponsored by the Red Cross Volunteer Service, was followed by dances for exhibitors on Wednesday and Thursday evenings, and a large number of the visitors attended the "Ten O'Clock Club" dance at the Greenville Country Club on Saturday evening.

The traditional barbecue was held on Wednesday at the baseball park, and this was unusually well attended. One unforgettable feature of the barbecue in 1924 was not repeated, but aside from this omission, which no one seemed to regret, the usual schedule of food and entertainment was carried out to the pleasure of those present.

Members of civic clubs who attended the show were able to maintain attendance records—the Rotarians and Lions holding a joint luncheon on Tuesday, with the Kiwanians and Civitans meeting likewise on Thursday.

The Greenville section of the American Society of Mechanical Engineers held a meeting on Thursday evening which was given over to the discussion of textile subjects. Among the speakers were George S. Harris, president, Exposition Cotton Mills, Atlanta, who discussed the Cotton-Textile Institute; Georgia Wrigley, of J. E. Sirrine & Co., speaking on "Power Losses in Cotton Mills"; Walter W. Gayle, southern agent, Saco-Lowell Shops, who spoke on "Opening Equipment"; and A. H. Cottingham, general manager, Victor-Monaghan Company, Greenville, who outlined the development of "Long Draft Spinning."

Also, on Thursday evening, the first meeting of The Arkwrights, Inc., the research and testing body organized this year as an adjunct to the Southern Textile Association, was conducted by President F. Gordon Cobb.

On Friday the semi-annual meeting of the Southern Textile Association, one of the best in history, was held. This convention is reported in detail in another story in this issue.

All in all, the week was a profitable one for the large crowd which attended, and exhibitors and mill men alike anticipate the Eighth Exposition, which according to all indications, will endeavor to surpass the high mark established by its immediate predecessor.

Southern Textile Association Meets at Greenville and Visits the Exposition

BY R. W. PHILIP.

A meeting which reflected an active working organization, and which included concise pertinent talks on mill topics; an unusual general meeting attendance; and entertainment par excellence made the semi-annual convention, held on Friday, November 5th, at the Poinsett Hotel, Greenville, S. C., an unqualified success.

Efficiency was certainly the key-note of the convention, both in theme and execution. It has always been a problem to provide for the fall meeting held co-incident with the Southern Textile Exposition every two years, something with interest sufficient to attract an attendance while the show was in progress.

The problem apparently was solved this year, mainly by the arrangement of a one-session meeting compactly filled with features of definite timely interest. The two-hour meeting held this year was as fruitful and interesting as some previous meetings which extended into two sessions on Friday and one on Saturday morning. The fact that the meeting was held conveniently in the hotel which constituted headquarters also tended to increase the attendance.

W. H. Gibson, Jr., superintendent, Aileen Mills, Biscoe, N. C., president of the Association, was in charge of the meeting, the details of which were handled by J. M. Gregg, secretary-treasurer. Mr. Gibson announced that the theme of the convention was better equipment, and as the first speaker, introduced E. Kent Swift, treasurer of the Whitin Machine Works, Whitinsville, Mass., who was assigned the subject,

New Machinery Against Old Machinery.

Mr. Swift said in part:

"I rise with some diffidence to address you on the most interesting subject 'The Upkeep of Textile Properties.' It is a technical subject, and you are an assembly of technical men, more interested in facts and figures than in flowers of speech gathered in the fields of oratory.

"In other words, I have the feeling that you are all from Missouri, and the point which you want to have brought out and defined is 'Can I pay dividends on the cost of throwing out old machinery and putting new machinery in its place under present day conditions?' 'Does it pay?' 'Am I better off to continue to run machinery which is still operative and which may be 20 or 25 or 30 years old compared with machinery built today?' I think this is the question which you want to discuss and have an adequate answer to.

"I should like to be able to give the answer to each man of you for his own particular mill, but I can't, and I don't think anyone can without a proper weighing of facts and figures in each individual case. But I can point out certain broad lines of manufacturing policy which I think are sound and which will be successful in the long run, and also touch briefly on certain developments in textile machines, their capacity and production, which justify the replacement of the older machines. The detail of the results which can be obtained from modern practice compared with

the old can well be left to the other speakers who follow, who are practical men in their own particular field.

"I might add that in presenting this subject to you I might be considered a suspicious character, as our business, of course, is the manufacture and sale of textile machinery, and as an advocate to the mills of throwing out old machinery and putting in new I might seem somewhat prejudiced. I probably am, as a matter of fact, and yet the principle which is firmly fixed in my mind is that we are prosperous and successful in our field only through the prosperity and success of the mills, whom we serve.

"In other words, unless you make money you can't afford to buy machinery, and any policy which is not to the advantage of the mills will react on us in the long run. The textile machine shops are the servants of you gentlemen and the corporations you represent, and far be it from me to advocate for our own interest the throwing out of old machinery unless such policy would earn money and pay dividends to the mills.

To go back to the subject of this discussion, there are three factors to a successful mill enterprise—Finance, Merchandising and Manufacturing. We are not interested today in finance and merchandising. In manufacturing, in which we are interested, there are two important divisions —Management and Plant. We will assume for the purposes of this discussion that the management is equally good. What of the plant?

"Two mills of 20,000 spindles each are placed side by side. Both run under the same management, use the same class of help and the same cotton, and are operated under like conditions. Mill No. 1 was built in 1900, Mill No. 2 in 1925. This is in the South. They are on print cloths and run night and day. You will find that the labor cost of Mill No. 2 will be approximately 1½ cents to 2 cents lower than the labor cost of Mill No. 1. Besides that, Mill No. 2 should be able, with modern picking and cleaning machinery, to use a lower grade cotton, which costs probably 1 cent a pound less than the cotton used in Mill No. 1. There are other overhead economies, such as less repair and upkeep of machines, and the many conveniences of adjustment which go with more modern machinery.

"In this labor cost I am taking the lower cost as having been obtained on the spinning of yarn alone, as I am assuming both mills are equipped with modern automatic looms.

"Now what does this economy amount to? For the purposes of argument we will give a very reasonable production of 42,500 pounds of spun yarn, 30s warp and 40s filling, 110 hours of operation. At 1 cent per pound saving, this represents $425 a week, or $22,100 a year; at 2 cents a pound saving, $44,200 a year; at 3 cents a pound saving, $66,300 a year.

"The picking, carding, drawing, roving, spinning and spooling machinery at today's prices figures for this mill approximately $250,000. If the saving is 1 cent a pound it represents a profit on the investment of 8.8 per cent; if 2 cents it represents a profit of 17.6 per cent; if 3 cents it represents a profit of 26.4 per cent.

"Now in this example I have assumed a profit of 1 cent, 2 cents or 3 cents a pound, have taken a print cloth mill and run it night and day to get my result.

"How true are these figures, and if true, what machines have contributed in particular to this saving? I know of two examples, under the same management, where Mill No. 1 and Mill No. 2 are situated similar to the example cited, and each of these mills is getting from 1 cent to 2 cents difference in their labor cost, depending on whether they are running coarse or fine work. If I were permitted to give the names and identify the mills they would be familiar to you.

"A number of you have put new cleaning outfits in your picker rooms and are familiar with the improvement which can be made in the quality of the stock. With up-to-date equipment at least 1 cent a pound can be saved in cotton. The figures as given can be proved.

"I have applied the percentage of gain on all the machinery. The saving in the cost of the cotton in the picker room is an outstanding gain, but modern spinning, with filling wind, tape drive, reasonably long traverse and reasonably larger rings, wide gauge, without separators, is another outstanding development through which savings in labor costs are made.

"I could go into considerable detail as to what has been the experience in different mills in comparing their old-style spinning with their modern spinning. I have a record of one mill of 25,000 spindles where the spinning was from 20 to 25 years old, 2¾ inch gauge, which was replaced by new spinning, wide gauge, without separators. The actual cost of operation in the spinning room alone showed an average of 24 per cent less than the cost of operating the old spinning. The gain increases with the fineness of the numbers run. In this particular case the gain started with 18s, showing a gain of 17.8 per cent, to 40s, showing a gain of 34.1 per cent. Both old and new spinning were under the same management, and careful records were kept before and after the installation of the new machinery.

Let us follow this argument through on the basis of a South Carolina spinning room on print cloths, which has a cost of 2½ cents a pound for spinning alone, and we will apply this average gain of 24 per cent against this cost, showing a saving in labor per pound of 6c.

"Going back to a 20,000 spindle mill with 42,500 pounds production per week of 110 hours, we find that on this production we save $255 a week, or $13,260 per year. The new spinning machinery will cost around $112,500. This saving in labor shows about 11.7 per cent on the investment, but this saving in labor cost alone, which should justify the investment in modern spinning, does not give due weight to the fact that the modern mill produces better yarn, double the amount on the bobbin, with accompanying savings, and makes better cloth.

"I could go on with other examples. I have picked out spinning and picking, as they seem to stand out above the other machines, yet take the revolving top flat card. The design of the card itself has not changed since 1900, and if in good condition I would not advocate throwing out, but I would advocate that the clothing be replaced at least every 15 years. On many cards you will find the clothing apparently sharp, of good length, and to all appearances in good shape, yet clothing which has been run for 15 years lacks the elasticity and carding qualities which you will get from new clothing.

"In drawing frames there has been considerable advance and improvement, and modern drawing, with rolls of the correct diameter, set to staple lengths, will improve the work instead of spoiling it, as the old drawing is apt to do.

"When you come to the roving frame you come to what seems to be an everlasting machine, but good roving too can show many economies in operation, but not the economy which can be obtained in the picking and spinning end.

"I am not going to take up your time with examples of the differences existing between machines of 25 years ago and today. If I started in, I should probably like to point out to you the comber, going back to the old Curtis type of Heilmann comber, 6-head, 8¾ inch lap, with a production of 250 to 300 pounds a week of 54 hours, to the most modern machine, which will produce anywhere from 20 to 24 pounds per hour, or practically as much per day as the old comber did per week.

"Rather, I would take up the general question 'What should be the policy as regards this difficult question of mill upkeep?'

"In the balance sheet of every mill where proper books are kept is found the item Depreciation, which will run probably somewhere from 2 per cent and 2½ per cent on buildings to 5 per cent on machinery, and in computing the profits for the year this item of depreciation, which is applied on all the plant property in varying percentages, is deducted from the gross earnings and set aside under

J. M. Gregg, Secretary-Treasurer.

Depreciation. What is it for and why should it be there?

"I have seen some mill statements where Depreciation is added to Surplus to give the grand total of undivided profits. Such an entry to my mind is wrong. Depreciation is set aside to be used in order that at the end of a period of time, say 20 to 25 years, the wear and tear on the machinery has been balanced by an item used either to replace that wear and tear or to provide a fund to enable the mill to replace machines obsolete, uneconomical and out of date, to the end that the mill property stands on the books at a figure representing its true worth, and allowance does not have to be made for the obsolescence or wear and tear of the plant.

"Depreciation in all mill properties is continuous and constant, and each year takes off from their values. Depreciation can be considered, not only from the viewpoint of wear and tear but also from that of obsolescence. Wear and tear can be taken care of to a large extent by repairs and proper care. Textile machinery does not, as a rule, go out of the window on account of wear so much as it does through obsolescence, through the constant and continued change in design and improvement in the machines themselves and by the changes in organization brought about by more scientific methods of operation.

"These two items taken together, wear and obsolescence,

W. H. Gibson, Jr., President.

are the reason for the difference in the cost of production mentioned in Mills No. 1 and No. 2.

"During the war period and immediately following, where there was great activity in the cotton trade, the broad principle of depreciation was quite forgotten as regards being practised to any extent in the revampment of old and existing equipment. Every machine was run at a profit and discarded machines even were taken out of the cellar and put back to work.

"Today, we are facing intense competition. I would rather have a mill on print cloths capitalized at $50 a spindle making money than a mill capitalized at $10 a spindle losing money. Your banking credit is based not on the value of the reproduction of your plant but on its earning capacity.

"The policy which to my mind should be pursued is a thoughtful recognition of this broad principle of depreciation and a constant study of the operating efficiency of the machinery in the mill, to the end that from time to time the depreciation fund set up on the books is drawn upon to replace and revamp such of the machines as are not keeping up to scheduled operation. Such a policy does not mean that you will spend a certain amount of money every year, but I think it does mean that you will spend a certain amount every few years and that you will everlastingly keep at it.

"The man who puts aside the expenditure necessary today, proposing to make it tomorrow, is apt never to make it, and in the end wakes up to a situation where he has a fine building but full of junk. It will run, it will

produce yarn, but it will not make it so cheaply as the machinery of his competitors. Ultimate competition must rest on the efficiency of the plant, other things being equal, and a constant and proper use of the depreciation fund will keep your plant in A-1 condition.

"I might also add that if you do not use your depreciation fund for the purpose for which it was created, you will find a strong tendency to pay out in the form of dividends to your stockholders that which was created for their protection, and once paid out, it is not easily replaced.

"The thought which I would like to leave with you is this thought of proper depreciation, of doing a little replacement or revampment every year or every few years to keep up your plant rather than putting off the day to a time when the expenditure will seem almost prohibitive."

The thought having been introduced in Mr. Swift's address, the remainder of the meeting program considered the upkeep of machinery and equipment in each of the major manufacturing departments. Each division in the mill was assigned to a superintendent, who was given from five to ten minutes to discuss it. The subjects taken up under this head, together with the speakers, were as follows: Pickers, by E. G. Waites, foreman of carding, Newberry Cotton Mills, Newberry, S. C., speaking in the place of J. M. Davis, superintendent; Cards, by J. R. Wikle, division manager and superintendent, Consolidated Textile Corporation, Shelby, N. C.; Spinning, by George F. Brietz, superintendent, Selma Cotton Mills, Selma, N. C.; Spooling and Warping, by Frank S. Dennis, division manager and superintendent, Consolidated Textile Corporation, LaFayette, Ga.; Weaving, by H. K. Hallett, superintendent, Kendall Mills, Inc., Paw Creek, N. C.; and Modern Machinery, by T. A. Hightower, superintendent, Kendall Mills, Inc., Edgefield, S. C.

Taken up in the order of their location in the mill, the first of this series of talks was on

Picking, by E. G. Waites.

"I feel no hesitancy in saying that any cotton mill which has failed within the last ten or fifteen years to install new opening, cleaning or picking machinery, has obsolete equipment in this important department, and has therefore not kept abreast of the times," declared Mr. Waites.

Taking up the matter of caring for the machines, Mr. Waites continued by saying that "if the pickers are kept in such condition that the stock being run is made to lay in a clean, uniform and even sheet, with an unvarying number of yards and pounds in each roll, the later processes of manufacture are thus much improved. A well-equipped picker department having modern opening and picking machinery is an essential feature in producing good strong even yarn. There are, unfortunately, many old worn out and obsolete pickers in operation today that should have been junked long ago and replaced by the modern equipment of our time. Mills following this admonition would find themselves enjoying larger production in their carding, spinning and weaving departments and their product would grade up enough over present quality that the difference would, in all probability, pay for the new equipment in an amazingly short space of time. It must not be understood that it is here meant to advise *all* mills to throw out present equipment and install new, for there are, as a matter of fact, some mills which have equipment needing only a thorough overhauling and which with different settings and adjustments would perform their work to conform closely with our present-day ideas of processes in this department.

"Some of the things which are essential if our pickers are to measure up to their duty I shall mention only briefly. Beater speeds and settings are most important and should be such that any breakage of fiber is avoided. Fan speeds should be just high enough to cause the stock to be spread evenly over the exposed screen surfaces without permitting any tendency to drag between the feed rolls and screen and thus cause thick and thin places in the sheet. Aprons should be kept in good condition at all times and run just tight enough to prevent slippage. Experience has shown the desirability of driving aprons by means of sprockets and chains instead of depending upon the apron belts which often gave trouble because of excessive stretch before the chain method of driving was originated.

"Instead of the old practice of filling the hoppers full and then re-filling only when the contents were almost out, it has been far better to maintain the stock at from one-half to three-quarters full at all times and the throats should be set close enough to prevent large chunks from going through.

"Feed rolls and beaters should be set in such relation to each other as is known to be most suitable for the length of staple being used, and the grid bar settings maintained which experience shows to be best for securing the greatest cleaning effect. Beater speeds should be adopted which give just enough beats per inch to fluff the cotton so that the grid bars may get in their work of taking out foreign particles. Feed rolls should grip the stock firmly enough to prevent the beater plucking it away in bunches.

"The screens should be regularly inspected and kept in the pink of repair and cleanliness. Otherwise, faulty work will result, as stoppage of the air spaces in the screens pervent fans doing their best to cause even deposits of stock on the screen surfaces, and worn-out or broken end guards cause serious air losses. At this point it should be remembered that dampers should always stand at from one-half to wide open so that the dust and short fiber may be conveyed to the dust room, where it belongs.

"Calender rolls should be kept clean and bright and free from such things as particles of belt dressing, oil, grease and such other things as may cause cotton to stick in spots. All bearings and shafts around the machines must be cleaned and oiled regularly if we are to minimize power consumption and the use of repair parts.

"Friction motions must be looked after and kept clean, and leathers renewed when necessary, and a condition maintained so that letting-off will be accomplished in an even manner.

"All measuring motions or devices, where the parent machines are of the same manufacture, should have identical gearing trains differing in no particular whatever, and they should not be permitted to acquire lost motion. This will assure the laps being made unvarying lengths.

"The evener motion should be disassembled two or three times a year and thoroughly cleaned and oiled and reassembled and adjusted to work freely and easily. The fulcrum and throw should be set so as to take care of from three to five laps on the back of the machine without any variation in the weight of the lap per yard.

"Lap rack blocks, more commonly known as loggerheads, should have ball-bearing rolls, thus assuring easy

running lap-pins. The oft-experienced variation in laps due to excessive friction between the lap pin and blocks is practically eliminated by this modern improvement.

"All finisher pickers should be made to produce laps having an unvarying yardage and weight and this can be done only if they and the preparatory processes are maintained in A-1 condition.

"It has been found that the upstroke beater used in tandem with the bale breaker makes for a combination nearly ideal in opening and cleaning cotton stock without curling. It has also been found most advantageous to equip the breaker pickers with evener motions and thus begin the evening process early enough so that the whole responsibility of producing unvarying laps may not depend upon the finisher alone. Carding beaters are to be preferred to blade beaters in the finisher process as the carding action of this type of beater puts the stock in better condition to be carded on the cards."

Cards, by J. R. Wikle.

Following along in the regular sequence, the next talk was that on the maintenance of cards, by Mr. Wikle, who said:

"A 40 inch Whitin card weighs 6200 pounds or over three tons and occupies 63.3 square feet or approximately 100 pounds per square foot. This may seem a small pressure but is one that I believe concerns the welfare or maintenance of the card a great deal. In short, the foundation upon which the card rests has a great deal to do with its life and efficiency.

"The cards of the mill of which I have charge are on the ground floor and are all setting on a solid concrete base. This base goes down to ground and in the ground about 8 or 10 inches. There can be absolutely no vibration to these cards. With such a foundation, settings can be as close as desired and excellent work done.

"It seems that mill engineers do not always give the thought they should to this question of vibration in cards with a result that at some mills good settings are almost impossible to be obtained. I once worked in a mill where it was necessary to put steel plates along the beams underneath the cards to decrease the vibration in order to obtain close enough settings to do reasonably good work.

"I have merely mentioned the foregoing to give food for thought and to here state that the life and maintenance of the card depends a great deal upon its foundation and the resulting vibration.

"As to the mechanical maintenance of the cards, the first thing that enters our mind is the question of clothing. It is almost needless to say that clothing on cards should be kept right up to the minute. Clothing with bad jams in it should be replaced with new cloth. Clothing that is loose should be redrawn and clothing that is worn almost or down to the knee should be replaced.

"Flats are sometimes ground so much that they are worn almost to the knee. When the clothing becomes worn so badly it becomes necessary to strip more often because the clothing fills up more readily. If they are not stripped often there is a tendency for good cotton to pass into strips for there is little or no room left on the wire to hold the good cotton and consequently the cotton is thrown first from cylinder to flats and flats to cylinder and back and forth the race goes. But the clothing being ground down so close on the cylinder, and the flats being cleaner, the cotton more readily adheres to the flats than the cylinder and so passes out as strips netting a loss to the mill in higher strip waste made.

"Our cards are ground every 11 working days running on a day and night shift and are ground for 7 hours. This makes the grinding occur once every 22 days for a 60 hour week. Flats are ground about once every two months. While grinding on one round of the cards we reset all flats and the doffer. The next round of grinding we reset the licker-in, feed plate, mote knives and front and back plates. About once a year we set all our screens, taking them out and cleaning them thoroughly.

"Where there is any chance of the foundation of the card settling they should be re-leveled about once a year. With the concrete foundation that I have mentioned in the first part of this paper we have found that the card will stay level indefinitely.

"A very important item in the maintenance of the card is the setting of the stripper stands. This should be done at least once a month else much damaged clothing will result. It is very easy for the stripper brush to ruin the foundation of the clothing without it being noticed.

"Flat chains become worn and stretched until it is necessary to take a flat out to tighten the chain—after it begins to sag again to the point where another slat should be taken out it is our rule to put on a new set of chains because we believe it pays.

"Flat stripper brushes soon wear down to the point of inefficiency and there are brush concerns in the South who reclothe these brushes as good as new.

"I believe there is only one remedy for a licker-in that is in bad shape or real dull and that is to have it reclothed. One reclothed every so often keeps them in good shape and the expense is not missed by the mill.

"Also I want to say that a multitude of carding sins are covered by the mill using a grade of cotton that is higher than necessary or a length of staple that is longer than necessary. Cotton is the fundamental cost of any mill and the saving of a grade or a 1/16 inch in staple by extra good carding will return the mill many hundreds of dollars in the basis upon which the cotton is bought. And this saving can certainly be attained by proper maintenance and operation of the cards. Wherever you see a good running mill you are almost certain to see good carding being done—it is the foundation of all operations in the mill.

"Lastly, I believe the most important thing in the maintenance of the card is the human equation. For we must have a grinder that is conscientious, diligent and intelligent if we want to get the most out of our cards. A grinder who has been with a section of cards for a long time knows the peculiarities of each card and what it takes to overcome these peculiarities. Cards sometimes are like people—there are all kinds, good, bad and indifferent. After all, the card is a very delicate piece of mechanism, despite its bulk, and requires almost a gift of keen touch to get the best results out of it and that is what a good grinder should have. Some grinders are born with this touch, others acquire it and some have it thrust upon them by a diligent boss."

Spinning, by Geo. F. Brietz.

The next department considered was the spinning room, and the speaker, Mr. Brietz, discussed various points of importance in operating this equipment.

"To preserve the life of a machine," he said, "it should be kept well cleaned and oiled by means of a regular sys-

tem. See that it is done on time. In this day of scientific research, with so many good oils to select from, the right oil should be found for the right place.

"Most machines need more care and attention than they get. No hook should ever be allowed on a fluted roll. Especial care is needed where a plant is running night and day, and both shifts should work together in harmony. The time spent on cleaning is always time well-spent. The use of compressed air in cleaning is a valuable addition of late years. All machines should have, at least annually, a general scouring, overhauling and alignment, and all spindles should be plumbed, top and bottom. There is a great contrast in the methods of today and those of 25 years ago, when a lick and a promise was about all there was to it.

"Some overseers offer prizes for the best kept sides, while other mills pay a bonus for the lowest upkeep cost of supplies, based on production.

"The inside bolsters are a little hidden member of the machine, but if it is not looked after periodically, it will wear and cause lots of bad work.

"Ball bearings on shafting and machines are a great power saver.

"Improper gearing, if overlooked, is a cause of bad running work, loss of power and short lived machinery.

"The hank system of paying both doffer and spinner has been found advantageous.

"The traverse stroke to the rolls is an important factor, and also the traverse stroke for the ring rails; one for quality, the other for production.

"All travelers should be systematically changed. Never put new rings in with old rings, but put new ones on a side or frame to themselves.

"All weight levers should be kept in parallel line and the weights hung in the same notch.

"Systematic inspection of all bobbins should be made and the bad ones discarded.

"Bands of uniform size should be used and kept on at a uniform tension. This is an important factor in the life of the spindles and bolsters.

"In some mills the humidifying system is not given the necessary care.

"The proper care of the leather rolls after they have been put on is often neglected. It is a good idea to keep a record of the number of rolls each section man uses.

"It is important to have the proper temperature in the mill in the winter time, especially on Monday morning, when the mill has been allowed to get cold. This can be costly to the operative and the machinery.

"A systematic use of belt dressing of the proper kind is important.

"The result of overtight belts both on shafting and machines is costly.

"We have found the change from warp wind to filling wind a great advantage on our frames.

"Acetylene brazing and welding outfits are a valuable investment.

"Regular overseers' meetings for full discussion are of great value to a plant.

"Among other improvements during the past few years has been the closing in of all running gears and parts possible, against the older pattern where many of the gears were exposed and many fingers paid the toll.

"In conclusion, I will say that in general, the better the machinery is kept up, the better the work runs, the better satisfied the help will be, and the less turn-over which will result. Eternal vigilance and care, and not deferring until tomorrow things that should be done today, is the best rule for keeping up our plants."

The fourth talk in this series was on

Spooling and Warping, by F. S. Dennis.

Mr. Dennis' remarks follow:

"In attempting to speak of the advantages of well kept machinery as pertaining especially to spooling and warping I cannot help but feel that my position in trying to discuss these processes is as unfortunate as the place that they occupy in the general scheme of things around the mill. The product of these operations is yarn, wound in a different form from that in which it is received, but it cannot possibly be better yarn than it was when it left the spinning frame because a spooler or a warper cannot impart additional qualities to it. They can, however, do great damage to good yarn and it is to prevent this that we must keep their functions constantly in mind.

"In discussing spoolers we must necessarily include accessories and auxiliary equipment such as spools, bobbin holders, tensions ,etc., all of which require the best of care and have an important bearing on the results obtained. With warpers we must also include section beams, spools and skewers and the condition in which these are kept will influence the final result.

"Fundamentally the two processes are the same in their two major functions. First the yarn must be unwound from the package in which it is received and then it is to be wound into the new package. The unwinding should be done with as little strain as possible, while the winding is done with a sufficient amount of tension to give a good firm package.

"Each process has been limited because of the difficulties encountered in unwinding the yarn and it is this phase that has received greatest consideration in recent years. As a result of this, filling wind can be used on spinning without the necessity of sacrificing any advantage in spooling; in fact much higher speeds are possible because of this development where the spoolers have been well kept. Similarily improved warping can be had when proper attention is paid to this function. The skewers and creel steps of warpers should receive careful attention at all times and should be replaced when they are found defective, which can be done at a very small cost.

"The winding needs to be done with a steady pull and all guiding surfaces should be watched closely to see that the yarn is not damaged while passing across them. Sharp edges and protrusions can cause serious damage to the yarn.

"It is difficult to speak of the advantages of well kept spoolers and warpers and is much easier for us to think of the many disadvantages which come about from a lack of proper attention being paid to these machines. Let us assume that the best results that we can possibly hope for would be that the yarn after having passed these processes is 98 per cent as elastic, 98 per cent as strong, 98 per cent as good in every respect as it was when it left the spinning frames. If there are bent spindles on the spooler or if grooves have been cut into the guide rods or if the spooler guides are not properly set then this percentage would be lowered considerably for the ends affected by these defects. In a mill of about 20,000 spindles with one

MATHIESON Chemicals

Textile Processing Economy

A **MODERN** trend in industry is towards greater economy in production through simplification of processes. In the chemical-consuming industries in particular, many processes may be simplified by the use of standard commodities in their most convenient and economical forms.

Among the textile mills, the general replacement of bleaching powder by liquid chlorine within the past few years is a notable example of this trend. There are many similar economies possible in textile processing, among which is the use of straight alkalies in place of the various alkali mixtures formerly in general use.

The replacement of these alkali mixtures by the proper straight alkali—58% Soda Ash or 76% Caustic Soda—shows a distinct saving in first cost, pound for pound, in addition to the fact that a substantially smaller quantity is required. Processing formulas once established with 58% Soda Ash or 76% Caustic Soda need not be altered or modified due to variations in the alkali strength or changes undergone in storage.

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number of warp yarn it will be safe to assume that in almost every warp in the mill there will be some ends that have been damaged at the spoolers which would cause the weaving to run badly.

"On the warpers, if the creels have been neglected and the skewers and steps are bad, if grooves have been cut in the dents of the front and back combs, if grooves have been cut in the drop wires, if the journals of the section beams and tension rolls are bent, if the section beam heads are not true, or if the drop wires are allowed to accumulate lint and dirt so that they will not fall then the yarn after warping will be badly damaged and the work must suffer in the subsequent processes. Another part of the warper, the care of which will pay big dividends, is the measuring device and when this does not work properly there will be uneven run-outs and the consequent increase in waste at the slashers.

"There are general principles that must be kept in mind with regard to the care of any machinery but there is not a place in the mill where a small amount spent for repairs and upkeep will pay bigger dividends than when it is spent on the spoolers and the warpers."

Weaving, by H. K. Hallett.

The final department taken up was weaving, this being discussed by Mr. Hallett from the standpoint of plant maintenance, the subject taken being "The Advantages of Well-Kept Machinery as Pertaining to Weaving." Mr. Hallett said in part:

"The 'advantages' are fairly obvious, so I hope it won't seem as if I was straying from my subject if I first discuss *how* machinery is 'well kept' and then return for a few minutes to the 'advantages.' The former is certainly dependent on the latter.

"Ten minutes is rather a short time in which to discuss even the subject of plant maintenance, but in order to give you the picture as it relates to weaving, it will be necessary to outline briefly the entire scheme.

"Plant maintenance is divided into two parts: first, belting, and second, machinery and mill buildings.

"Belting we shall pass over hurriedly, but it has to do with the speed of belt-driven looms as well as motor driven, so I will mention the major points. A study of the subject was made to keep the cost of belting at the lowest possible minimum by proper cleaning, dressing and inspection; to maintain the speeds of all machines at the standards set; to maintain operation of machinery at all times; and to maintain an adequate set of records so that an accurate check might be had on the wearing qualities or the economy of any particular belt.

"All belts, including motor, counter, counter to machine and purely machine belts, except cone belts on speeders, come exclusively under the jurisdiction of the belt man. The belt man cleans and dresses all belting on a regular schedule, also inspects for slackness or slippage, and twice a month checks individual machine speeds, which of course includes looms. In order to schedule and summarize the work, certain records are kept, such as, tickler card, belt record, belt renewals, belting costs, and speed records.

"The other division in the plan is Machinery and Mill Building Maintenance. In order to maintain the standards of machine stoppage, end breakage and machine speeds, it is essential to keep the machinery in as near perfect condition as possible. To do this, we must, as Henry Waldron says, inspect the machinery and equipment at such intervals as will insure detection of misadjustment, make such repairs or replacements as inspection shows to be necessary, keep systematic records of equipment, inspection and repairs, and keep tickler records to warn of the necessity of re-inspection.

"A brief outline of the workings of the plan is as follows: There is an inspection report for every machine in the mill, listing the items to be inspected. To simplify the reports, the questions are so worded that the inspector

(*Continued on page* 147.)

An Opinion from the Selling End.

One of the northern visitors at the Greenville Show was E. J. Hesslein, president of Hesslein & Company, Inc., and Neuss, Hesslein & Company, Inc., New York, who was looking over southern conditions. When interviewed at the Exposition by COTTON's representative, and asked, "What do the mills need most", he expressed the following views:

"The last five years have seen considerable change in the methods of distribution of the products of the cotton mill industry. The supply has more than exceeded the demand of the home trade and manufacturers have, in many cases, been unable to dispose of their entire production.

"New methods, progressive ideas and seasoned salesmanship are unexplored regions and it is obvious that a neglect of these factors must result in unsatisfactory sales.

"Greater export outlet is the only solution here, but should be handled in a practical and experienced way through export channels long established and familiar with the business, and not in the hit-and-miss fashion that manufacturers have used in handling this problem in the past; catering to foreign trade only when domestic business was quiet, but disregarding export outlets immediately the home market picked up. Intelligent and tried methods are entirely lost sight of.

"Many sales agents have at the present time several mills manufacturing identical fabrics. Regardless of a desire to prevent it, this condition can only bring discrimination against such manufacturers whose goods are less well known.

"Again, during dull times, when the mills are pushing their agents hard for business, they overlook the mill's position entirely. Mills are sometimes forced to accept business on fabrics for which they are not equipped, resulting in unbalanced production and increased cost. When the order is taken, it shows a paper profit which eventually is often an actual loss.

"This condition can only be overcome by sales agents who know mill conditions and can make a thorough study of each individual mill's possibilities.

"Some mills are seriously considering selling their goods direct, thus dispensing with the sales agent entirely. I believe this will be found to be more expensive, except in such few cases in which the manufacturer's production is large and varied.

"A well organized commission house, intelligently managed, whose policy does not permit the representation of conflicting accounts, and one that is in a position to assure a large and even domestic and export distribution seems to be the best solution of the problem of what the mills need most."

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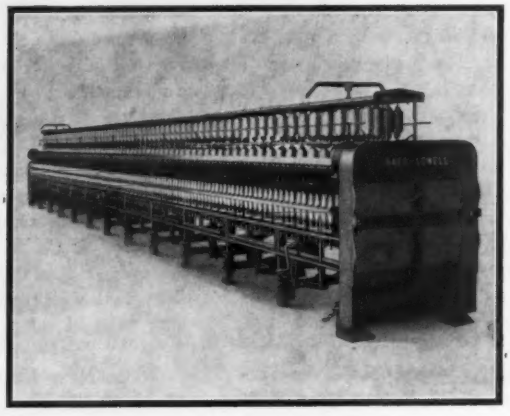

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What the Southern Mills are Doing

The Roundtree Cotton Mills, Inc., with an authorized capital stock of $1,000,000, have opened offices in Meridian, Miss., and announce the preparation for development and operation of the Lauderdale Cotton Mills, Meridian, and the Magnolia Cotton Mills, at Magnolia, Miss. J. A. Roundtree is president of the concern. C. R. Miller, of the C. R. Miller Manufacturing Co., Dallas, Texas, is chairman of the board of directors, which is composed largely of Meridian business men.

According to the reports, the Connecticut Mills Company, of Danielson, Conn., will erect a mill at Albany-Decatur, Ala. The building, it is understood, will be three stories, 120x480 feet, and will contain 32,000 spindles. Tire fabric will be manufactured. Whether new machinery will be purchased or equipment removed from the Danielson plant to Alabama is not stated.

Construction work on the new mill of Morris & Company, at Morrillton, Ark., has started. The main mill will be one-story, 410 x 156 feet. Robert & Company, are the architects. It is understood that 10,000 spindles and 42 looms will be transferred from the company's Groveville, N. J., mill to equip the new plant.

Manufacture of narrow fabrics is the business of Lovelace Brothers, Columbus, Ga., which recently began operations.

The Georgia-Kincaid Hills, Griffin, Ga., have purchased the Lowell Bleachery, South, which was built several years ago by the Lowell Bleachery, Lowell, Mass., and the Kincaid Mills, the latter now being a part of the Georgia-Kincaid merger. The officers of the new bleachery organization are: John H. Cheatham, president and treasurer, and George N. Murray, vice-president and secretary. The bleachery handles the entire output of the Georgia-Kincaid Mills for finishing, and also does a commercial business.

Dwight Manufacturing Co., Chicopee, Mass., has acquired the plant and equipment of the Essex Cotton Mills Newburyport, Mass., and the machinery will be transferred to the company's properties at Alabama City, Ala. The announcement to stockholders states that "The earnings of your company's plant at Chicopee, Mass., have been and still are unsatisfactory, but the plant at Alabama City has consistently made money, and it is in the hope of still further increasing these earinings that the present plan has been adopted."

The contract for the construction of an addition to the Ninety-Six Cotton Mill, Ninety-Six, S. C., which will double the capacity, has been awarded to the Fiske-Carter Construction Company. The addition will be 245 x 125 feet, three stories. Machinery transferred from the Fairhaven Mills, Fairhaven, Mass., will be installed.

An addition to double the capacity of the plant is being made by the Eastman Cotton Mills, Eastman, Ga. Park A Dallas, of Atlanta, is engineer. S. C. Smyly is general manager of the mill, which at present contains 10,500 spindles and 270 looms.

Contract for 50 new houses for operatives has been awarded by the Dwight Manufacturing Co., Alabama City, Ala. The houses will be from three to five rooms each, and will cost approximately $65,000. The plant is operating full day-time schedule with part of the equipment running at night.

An addition 460 x 126 feet has been completed at the China Grove Cotton Mills, China Grove, N. C. Equipment installed in this building will increase the number of spindles to 43,000, to which 7,000 additional spindles will be added later on.

A mill 400 x 150 feet to house 5,000 spindles, will be erected at Shreveport, La., by The L. H. Gilmer Company of Louisiana. Park A. Dallas, of Atlanta, is the engineer. The LaGrange Lumber & Supply Company has the contract for building the plant.

Holt, Love & Holt, a new concern in Burlington, N. C., have purchased 50 Stafford looms on which wide novelties will be manufactured. The company is headed by Eugene Holt, manager of the Aurora Mills, J. Spencer Love, secretary and treasurer of the Burlington Mills, Inc., and W. Kirk Holt.

Work is progressing on the new plant for the Sauquoit Spinning Co., of Alabama, at Gadsden, Ala. The mill, it is understood, will be in operation in January. Robert & Company are the engineers.

A beam dying plant will be added to the Florence Cotton Mills, Forest City, N. C. J. E. Sirrine & Company, Greenville, are the engineers.

Individual electric drive has been installed at the D. E. Converse Mfg. Co., Glendale, S. C.

Hartwell Mills, Hartwell, Ga., are to replace old equipment with new automatic looms, it is understood.

A three-story dryer room, of reinforced concrete construction, is to be erected by the Revolution Cotton Mills, Greensboro, N. C.

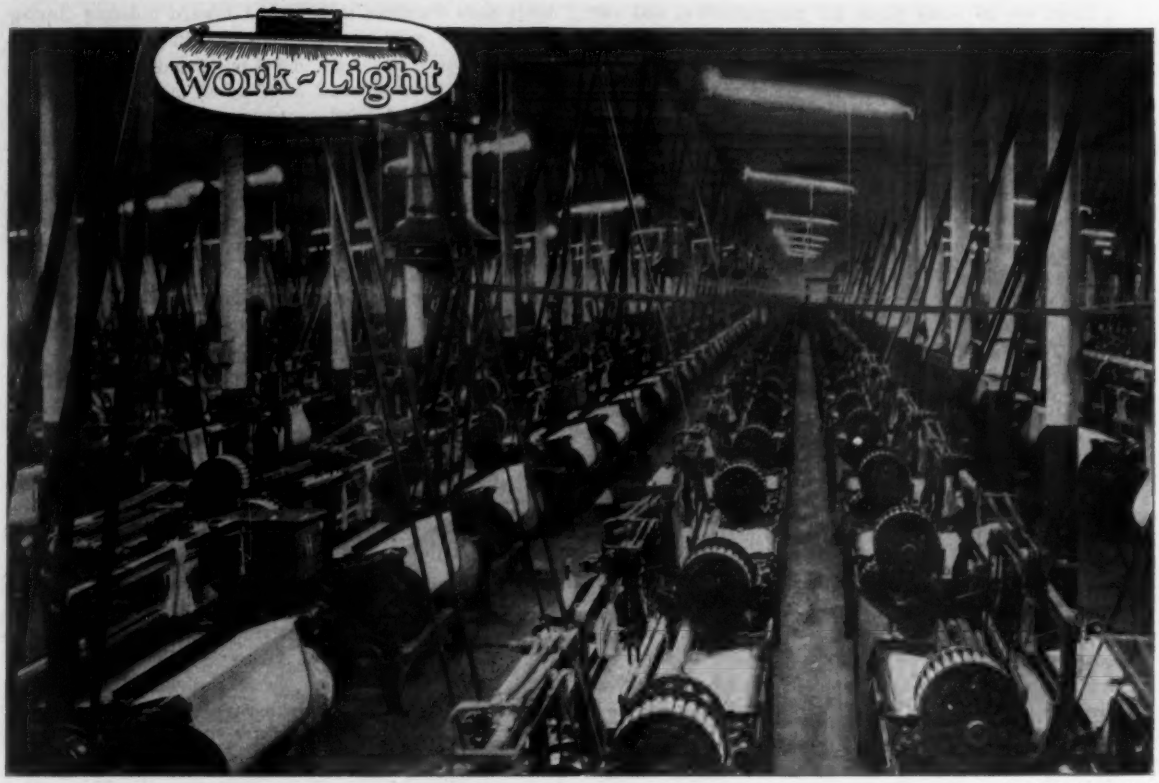
Catawba Cotton Mills, Newton, N. C. have installed a dyeing plant which provides them with facilities for furnishing yarn in colors.

New England Mill Situation.

The textile business is better in New England than it has been at any time in three years but it is still very far from being in a prosperous position. Many plants are still in the process of liquidation or akin to it and some of the larger plants are still operating below capacity. The better condition consists very largely of the improvement in demand for goods that has been noted from time to time in the past few months, plus the hope that arises from the advent of lower cost of raw material.

There has been a decided gain in the volume of goods offered for finishing in job printing and bleaching plants, and some of the finishers have an abundance of rayon lines. But even in this direction the plants have some distance to go before they may be said to be on a sure basis of full output for any sustained period, and a large part of the work in hand is of a rush character, following prolonged delays in putting Spring goods in work.

The reorganization of the finances of the Saco-Lowell machinery shops now under way is an instance of how hard pressed the machinery men have been for a year or more. There appears to be some light ahead for them in the expansion of the southern industry, but little in the way of new propositions comes out of New England with a New England location.



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A. H. Robbins, manager of the Eureka Cotton Mills of Chester, South Carolina, pictured above, states that since installing Cooper Hewitt lamps they have reduced their seconds with the night shift fully as much if not more than when they only operated a day shift.

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BETTER THAN DAYLIGHT

There are so many plans for reorganization and consolidation underway, and so many suggestions being made for the sale or liquidation of one property or another, that those outside of the New England field easily gather the impression that the whole industry here is going to pot. As a matter of fact it is believed that the bottom has been touched in the matter of demoralizing talk and an uplift is believed to be underway. It is certain that some large investing interests are changing their attitude and are willing to assist any plan toward reviving plants that are shown to be under good management at the manufacturing and merchandising ends.

There seems now to be little liklihood of saving the Hamilton Mfg. Co., of Lowell as a going concern. A proposition has been made to the stockholders of the Tremont and Suffolk mills of the same center to liquidate or remove the machinery South. This is opposed by most of the stockholders now in control, as it is being shown that recent changes in production and selling may work the company onto a better basis.

In the same city, another mill is now linked up with a proposition to consolidate, conversations having occured among large stockholders of the Pepperell Mfg. Co., of Biddeford, Me., and the Massachusetts Cotton Mills of Lowell, to bring their interests together. There is a strong prospect that this can be accomplished. The Massachusetts owns a large plant at Lindale, Ga., and the products rather supplement, than conflict with, those of the Pepperell. The latter has been successful under new management and that is the underlying cause of trying to bring the two plants under the same direction.

A plan is under way to liquidate the Salmon Falls Mfg. Co., a tire fabric plant that has not been running and cannot well be changed over profitably. It does not seem to hold fourth the possibility of profitable operation, as in the case of the mills at Fall River recently purchased by the Firestone interests, or some other plants in Connecticut that are being worked night and day on tire fabrics. The Salmon Falls is one of the oldest plants in New England.

There is a wealth of other reports and rumors afloat, among others the suggestion that the Amoskeag Company may absorb the large gingham mills in Lawrence and York. Me. There seems to be no foundation in fact for this particular report, yet for three or four years it has been reported that the Amoskeag Company was seeking a southern connection, and its action in taking on the Fitchburg gingham plants still gives color to reports of this general character. That strong plants financially are certain to absorb many of the plants now known to be purchaseable is not doubted so that denial of any sort of an improbable rumor may be risky.

Returns to stockholders are still very meagre. The most recent tabulation of dividends paid to Fall River mill investors showed an average distribution of .727 per cent for the fourth fiscal quarter of the year. Twenty-four out of 39 corporations paid nothing. At the present time more of the mills are in operation than has been true for three years, an average of about 70 per cent of the spindles and looms being occupied.

In New Bedford dividends have been small and mill shares have been declining a little. Latterly the business has been showing improvement and now bids fair to hold much better as the converters are buying generally and users have overcome their inertia toward ordering Spring goods. The shirting trade has bought liberally and a large business has been done on broadcloths. Madras shirtings are being used more freely and very recently there has been a decided improvement in the call for rayon striped goods.

Voiles, lawns, sateens, and other staples have been selling moderately. Silk and cotton goods have not sold as freely as usual and some of the mills that were large producers in these lines have looms available. The volume of rayon being used in cotton mills appears to be less than a year ago but gains have been steady recently and the impression is that dress goods will come in stronger in the rayon division, later on.

Mills throughout New England are making draperies of many kinds. The market is not so good, but some very beautiful rayon mixtures are coming forward for Spring. Some of the Rhode Island and Connecticut mills have been featuring goods of this character. Rayon continues in use largely by the bedspread manufacturers, the Monadnock of New Hampshire, Bates of Maine, Stevens and Monument in Massachusetts, and other leaders in this trade being more largely engaged in rayon and cotton mixtures than in all cotton goods.

The fancy towel and union towel business has been quite full, such mills as the Amoskeag, Stevens, and others doing a full trade on union goods, and some of the smaller weaving establishments finding trade steady on fancies.

A new blanket season is opening and New England blanket mills are offering a very wide variety of fancies and novelties in all cotton and part wool. The market demand for part wool blankets has become so broad that nearly all the mills are now offering some of their product in mixtures. The Tremont and Suffolk product has undergone a complete change since the preceding season, fancies of all kinds now being included, and the heavier wool napping being a feature of the new output. The Esmond, Nashua, Beacon, and Massachusetts lines have undergone complete re-styling and many novelties in napped fabrics for robes, couch throws, crib blankets, bath robes, etc., are being shown.

The new season on flannellettes is not yet opening. The larger producers are not in a hurry to push new lines but as many of the southern mills are ready to move when buyers are ready to operate, it is quite possible that goods for the manufacturing trades will be offered shortly. Several of the New England mills have done rather better on flannellettes than on the more staple flannels. They have held prices very steady on their high grade fancies and buyers have been taking the goods steadily all through the Fall, just as they happened to require them. They have not ordered ahead but the stocks of goods on hand at the season end are infinitesimal.

So small a proportion of heavy colored domestics is now made in New England that market movements affect them less than other lines. The Amoskeag Company has done the largest business in tickings this year in its long history, this being explained in part by the large range of fancies offered in standard constructions and sold to the large mattress manufacturers. Denims have ceased to figure largely as a New England product.

In wide sheeting, sheets, and pillow cases, New England mills are holding their place. In fact the Pepperell mills have added materially to their output in the past

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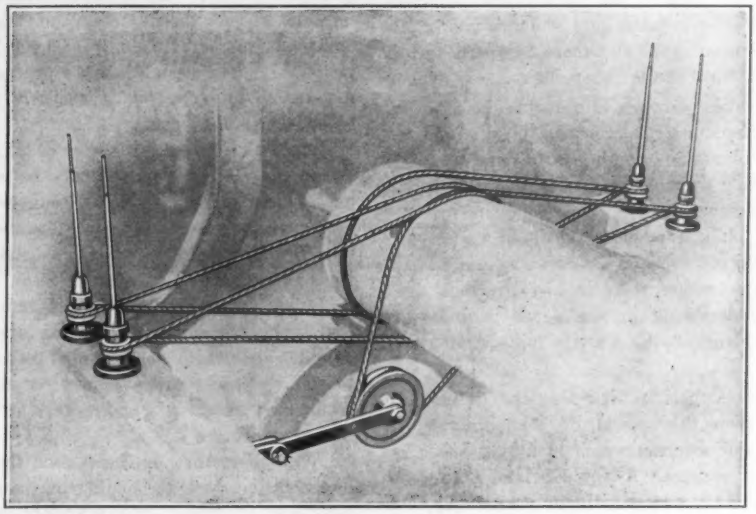
PAWTUCKET, R. I.

COTTON MACHINERY



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All the fine qualities of tape drive are embodied in this device with the additional advantages of lower cost of upkeep.

Uniform speeds are obtained assuring more even twist, and slippage is reduced to a minimum, due to the large contact area of the band with the cylinder and spindle whorl; this being double that of tape driven spindles.

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few months and have shown a profit on their operations. The Naumkeag Company continues to sell all the goods it can make and the profits average as well as those reported by any mill in the country. At the same time it is not disputed that the great bulk of the sheeting output has gone South and will stay there for years to come.

The wash goods season has opened slowly this fall. Most of the business done up to the opening of this month was on the staples and they were bought liberally. There has been a good business booked on some of the printed lines offered by the large corporation printers but until recently the converters were at sea concerning styles and colors and were unwilling to make long commitments. This month the gain has been rapid and there has been a rush of small orders into most of the job printers.

The large corporation printers continue as the most active factors in New England. The Pacific, American, Algonquin, and Windsor plants are running in full and some departments are running overtime on specialties of one kind or another. The bleacheries have not been doing quite so well. Competition on staple goods has been very sharp from southern plants and some of the New England bleacheries are feeling it stronger than at any previous time. The new Sayles undertaking in the South is underway and the southern plant of the Pacific mills finds work plentiful.

One of the notable facts in New England in the past few months has been the spread of community spirit among merchants and manufacturers, and to a lesser extent perhaps among workers. A New England Conference has been operating very successfully in assembling facts as to agriculture, manufacturing, transportation, power, and other matters of prime importance that have been largely neglected in the past.

Some of the results shown by statistical studies of the whole New England situation have surprised New England investors and there is a decided decrease in the pessimism with which the community was saturated some months ago. It seems to be the forerunner of a larger development of new merchandising and manufacturing methods that will have a wide effect upon future industrial development.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, November 13, 1926.

Arrangements having been made to finance the surplus of this year's cotton crop, last Monday's government forecast for a yield of 17,918,000 bales vs. 17,454,000 bales as of October 18th and last year's crop of 16,104,000 bales, failed to depress values, already very low, any further. In fact prices are somewhat higher than they were one week ago.

Washington advices are to effect that actual operation of the plan to remove 4,000,000 bales from the market is expected to be put into effect at once, and that finance groups will have $162,000,000 available. Basis of loans, it is said, will be 9 cents per pound for middling white cotton, 7/8-inch staple.

Compared with last season the South has marketed since August 1st, 8,069,000 bales vs 7,598,000, exports from the United States for the same period have been 2,890,000 bales against 2,795,000, and spinners of the world have taken of American cotton thus far this season 4,683,000 bales compared with 4,388,000.

Today the world's visible supply of American cotton is 5,462,000 bales vs 4,316,000 last year, of other kinds 1,086,000 against 1,126,000, of all kinds 6,548,000 vs. 5,442.000.

As is generally known, the price of American raw cotton is below the cost of production, and it is relatively, and in most instances comparatively cheaper than foreign growths, and it is reasonable to expect that the world will consume an enormous amount of the American product this season, perhaps about 16,500,000 bales compared with 15,165,000 last season when the average price for the season, for Middling cotton, was nearly 20 cents per pound; to be exact 19.88 cents.

Large as exports and spinners takings are already this season, they would undoubtedly be much larger were it not for the scarcity of ocean tonnage, due to the British coal strike, which necessitated large exports of coal from the United States to supply the shortage of fuel in Europe, which absorbed the surplus of ocean tonnage.

Latest developments, however, indicate that the British coal strike, which has been in existance for the past seven months, and which has crippled British industry and deprived the trade of sufficient tonnage for exporting of cotton and grain, will soon be at an end, perhaps in the immediate future.

With the return of cheap coal, the price of which will likely decline with the ending of the coal strike, Manchester, long depressed, will probably be in better position than it has been for years because of cheap raw cotton which will permit of increasing mill activity in England.

Tattersall's Bureau, Manchester, cables: "Trade more active. Big Indian cloth business. Manufacturers extending order lists. Yarns firm, with a healthier demand."

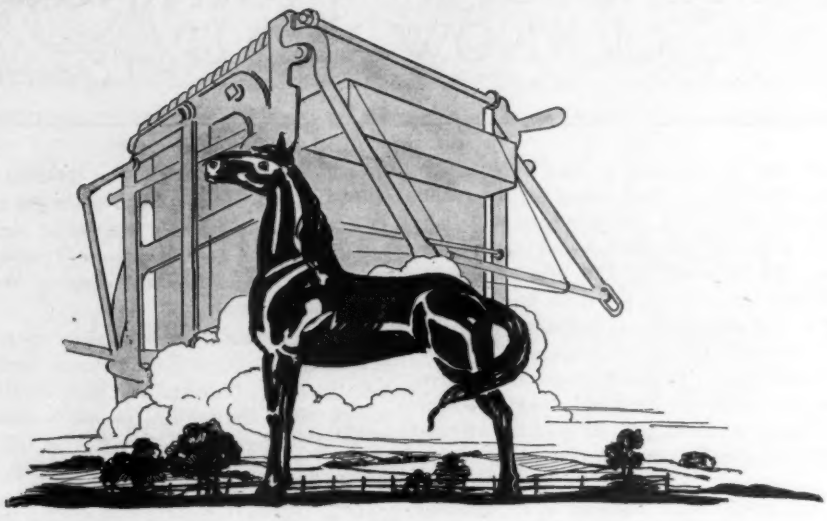
Because of cheap raw cotton the textile situation on the European Continent and in the Orient is in good shape, with prospects of continuing to expand, especially in Japan where the mill output is of record breaking proportions.

In the United States consumption of raw cotton is on the increase, returns being of record breaking proportions for October, including linters 668,000 bales vs 621,000 for October of last year, making a total for the three first months of this season of 1,863 000 bales against 1,693,000 for the corresponding period last season.

There continues a very good demand for spot cotton in the South, particularly for the better grades, and the impression prevails that much of the higher grades are likely to be tied up by the holding movement now getting under way.

While the market will probably continue to have its ups and downs until the weight of the movement is off, buying, especially on important depressions, would seem to be advisable in anticipation of results to come of the holding movement, the probability of the countinuance of free exports and indications for the continuance of large spinners takings.

Aside from these features of the situation, the anticipated drastic reduction in cotton acreage next spring is not to be lost sight of, as this development will likely be the main lever to lift prices ultimately.



Thoroughbreds—

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Philadelphia

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NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

A. T. QUANTZ died at his home in Rock Hill, S. C., on November 9th following a critical illness of more than a week. Mr. Quantz was one of the prominent operating executives of the state and had held several responsible positions. From superintendent of the Aragon mill at Rock Hill, he became president of the Glenn-Lowry Mills at Whitmire, S. C., and when that mill was acquired by the Aragon-Baldwin interests, he was made general superintendent of the entire group. Ill health forced him to give up the position, but a stay in Florida proved beneficial and he returned about a year ago to the position of general efficiency chief at the Aragon mill. He was 46 years of age.

AB JORDAN has become superintendent of the Jackson Mill No. 2, at Wellford, S. C., succeeding A. D. Steadman, resigned.

B. J. DOBBINS has become superintendent and manager of the National Yarn & Processing Company, Rossville, Ga., succeeding the late Stephen D. Bennett. Mr. Bennett's son, C. D. Bennett, is assistant superintendent.

A. F. GARRISON has become superintendent of Hartwell Mills No. 1, Hartwell, Ga. He was formerly superintendent of the yarn mill of the Charles H. Bacon Company at Lenoir City, Tenn.

GEORGE W. PRITCHETT, southern representative of the Morse Chain Co., with headquarters at Charlotte, N. C., was missed at the Southern Textile Exposition in Greenville, S. C. This is the first exposition Mr. Pritchett has not attended, and illness was the only reason for his absence. His friends wish him a speedy recovery and hope he will soon be back into the ranks.

W. L. O'BRIEN has become associated with Ira L. Griffin, southern representative of Stein, Hall & Co. and the Powers Regulator Company, with headquarters in Charlotte, N. C.

GEORGE E. CHAMBERLAIN, general superintendent of the A. E. Staley Manufacturing Co., Decatur, Ill., died on October 24th, following a brief attack of acute indigestion. Mr. Chamberlain was one of the outstanding figures in the corn products industry, and had contributed much to its development. He is credited with designing and starting practically every starch and glucose factory in this country. He built the Argo plant of the Corn Products Refining Company in 1906, and since his association with the Staley concern, up to his death, contributed invaluably to its growth and progress, and the progress of the industry as a whole.

L. P. DUNCAN, assistant superintendent of the Tallassee Mills, Tallassee, Ala., has resigned to become assistant to Superintendent N. B. Murphy at the Pelzer Manufacturing Co., Pelzer, S. C.

B. R. BURNHAM, for the past several years superintendent of the Whitney Manufacturing Co., Whitney, S. C., has resigned and has become connected with the Borne, Scrymser Company, New York City, manufacturers of "Breton Minerol" process for oil spraying raw cotton.

HERBERT A. BUROW, who since graduation at Texas A. & M. College, has been overseer of carding at the Bonham Division of the Consolidated Textile Corp., Bonham, Texas, has become assistant agent at the Pastex Cotton Mills, Post, Texas.

C. H. ELDREDGE has been made superintendent of the new Martha Mills of the Hightower interests, at Thomaston, Ga. Mr. Eldridge has been superintendent of the Aldora Mills, Barnesville, Ga., for a number of years.

T. A. CASTON, superintendent of the Carolina Cotton & Woolen Mills Company at Draper, N. C., has resigned to become superintendent of the new Arnco Mills at Newnan, Ga.

G. C. TRUSLOW has been promoted to the superintendency of the Draper plant succeeding Mr. Caston. Other promotions made at this plant are: H. J. Christley, from overseer of spinning to assistant superintendent; J. O. Newton, from night overseer of spinning to overseer of spinning; E. I. Hicks, from second hand in spinning to night overseer of spinning; C. C. Summer, from second hand in spooling to second hand in spinning; and E. L. Funderburk, to second hand in spooling and winding.

W. W. SPLAWN has become overseer of spinning at the Walhalla plant of the Victor-Monaghan Company, Walhalla, S. C. He formerly held a similar position at the Lydia Mills, Clinton, S. C.

S. L. MCCRACKEN has resigned as superintendent of the Steele's Mills, Rockingham, N. C., and has been succeeded by J. C. Montjoy, who has been superintendent of the Dora Cotton Mills, Inc., Red Springs, N. C.

D. C. SHAINLINE has charge of Department 8 of Penmans, Ltd., Paris, Ontario, Canada.

C. S. PITTS, who for nine years has been overseer of carding at the Star Thread Mills, Athens, Ga., recently resigned to accept a similar position at the new Galvez Cotton Mills, Galveston, Texas.

U. S. HENDERSON is superintendent of the Latsch-Hazlewood Spinning Company, which recently took over the Munford Cotton Mills Co., at Munford, Ala.

E. N. BESHEIM, formerly of the Rock Bearing Company, Toledo, Ohio, has been appointed assistant to the general manager of the Timken Roller Bearing Service and Sales Company, Canton, Ohio. S. C. Partridge has been placed in charge of the Buffalo office of the industrial division of the Timken Roller Bearing Company.

T. A. WRIGHT has become superintendent of the Belton Yarn Mills, Belton, Texas.

F. L. CRAVEN has become overseer of carding at the Borden Manufacturing Company, Goldsboro, N. C. He was formerly spinning overseer at the Johnston Manufacturing Co., North Charlotte, N. C., in which position he is succeeded by J. P. May, formerly overseer of weaving at the Melville & Gambrill Mills, Bessemer City, N. C.

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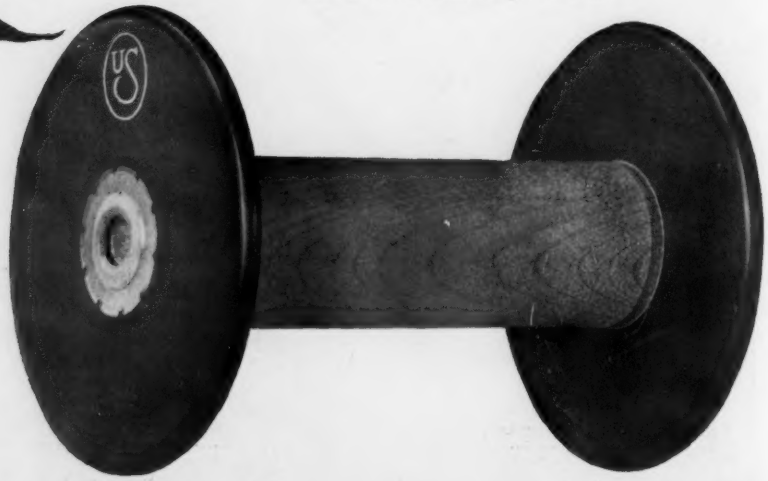
The secret of their tremendous holding power is in the method used to clamp the head to the barrel. A tenon on the barrel extends through the head. A tapered Dogwood Bushing is driven into the hollow end, forcing the tenon outward and locking into the projections on the fibre head, (a special feature of the U S Spool). The wedge is bone-dry when pressed in, and soon absorbs moisture to the normal content of the wood and expands, making the joint between head and barrel more solid than one-piece construction.

This construction has been a feature of U S Fibre Head Spools for over 10 years.

If you are not already using U S Fibre Head Spools, write our Providence Office or nearest representative for a sample. See its advantages for yourself.

U S Bobbin & Shuttle Co.

Providence, R. I.

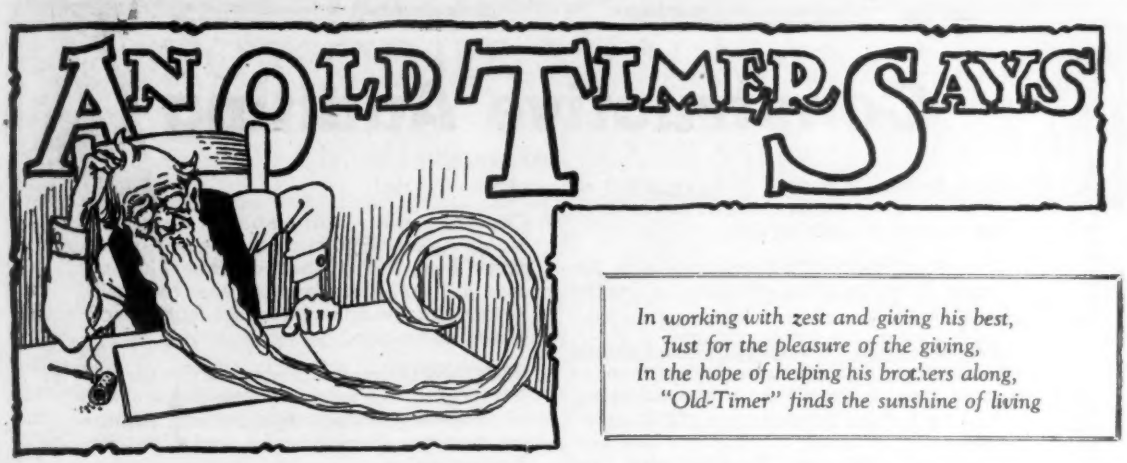


Representatives:

D. C. RAGAN
High Point, N. C.

M. OUSLEY
12 E. Stone Ave.
Greenville, S. C.

DAN O'HARA
248 Chestnut St.
Philadelphia, Pa.



In working with zest and giving his best,
Just for the pleasure of the giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

When you hear of a section man or an operative who speaks well of you and does anything he can to "Boost" his job—Don't you think more of that man than you do of others who are working right along beside him? Sure you do. And I hear you say, "Any fool knows that. What are you driving at, anyway, Old Timer?"

It is just this, brother. Are *you* giving your boss full cooperation? Do you speak well of the things he does that really deserve it? Or are you watching his every move to be able to criticize every little thing that will bear criticism and many things that you have to add just a little on to in order to make your criticism sound stronger?

Oh! well, it looks like some overseers and superintendents just don't want to rise above the crowd anyway.

They are too darn near-sighted and selfish to realize that when you stand up for your firm; when you speak well of your firm or of your employer, you are saying a good word for yourself.

If you can see it in the section man or employee that works for you, don't you suppose your employer has got enough sense to—

Oh piffle! What's the use of trying to illustrate any further?

• • •

Here is a pretty good one to have printed on a big sign to put up in your mill, in your office, or anywhere:

"Be proud of your work;

"Be proud of your employer;

"And rest assured your employer

"Will be proud of *you.*"

When you go to the store to buy a suit of clothes or a hat or a pair of shoes, you are looking for the merchant who has the best goods to offer.

When you are looking for a job you are looking for a firm who has the best job to offer.

So it is with everything in this world.

Well, now, Mr. Overseer and Superintendent, what have YOU got to offer?

Don't you realize that the man who employs you is going to try to analyze you to find out what he is buying; whether he is going to get his money's worth or not; just like you do when you buy that pair of shoes or that suit of clothes?

Just when have you gotten off in a corner and had a good old heart to heart talk with Mr. Yourself?

Remember that long article "Old Timer" gave you about taking stock of yourself? (Why not look it up and read it again—it will be just as fresh reading today as it was then.)

Now do you really believe you *can* take stock of *yourself?*

Can you criticize yourself like you can criticize the other fellow, or your boss?

Can you really see your own faults like you see the other fellow's faults?

Can you be absolutely honest with yourself?

If you can (and if you will honestly try hard enough, you can), Old Timer will tell you a secret based on twenty-five years of a constant, persistent study of human beings.

Here is that secret: If you can take stock of yourself, then you are a man miles above the average, and that means that you are going to rise miles above the average man in your profession, it matters not what that profession is; lawyer, doctor, preacher, business man or mill man.

If you don't believe this is sound reasoning, first give it a trial and if you find it does you any harm, if it causes you to run your job any worse, if it lowers you any in the estimation of your employer, if it lowers you any in your estimation of yourself—

Well, you just charge it up to Old Timer and say he is a pure "damphool."

YATES SMITH, manager of the Lynchburg Division of the Consolidated Textile Corporation, Lynchburg, Va., has resigned to accept a similar position at the Whitney Manufacturing Co., Whitney, S. C.

A. S. THOMAS, formerly treasurer of the Whitney Manufacturing Co., Whitney, S. C., has taken the position of general manager of the Perkins Hosiery Mills, Columbus, Ga.

M. G. STONE of Spartanburg, S. C., general superintendent of the Pacolet Manufacturing Company plants, will also have supervision of the Whitney Manufacturing Co., at Whitney, S. C.

L. F. BERRY is resident representative of the Allis-Chalmers Mfg. Co., at a branch office opened at 512 Reynolds Bldg., Jackson Michigan, which is a branch of the company's office in Detroit.

J. T. MCGREGOR, former agent at the Stonewall Cotton Mills, Stonewall, Miss., and well known throughout the textile industry, was visiting with friends in Atlanta recently.

Constructive Auditing

An independent audit is to be regarded always as the means to valuable advice from the auditor or auditing firm.

Too often, auditing service ends with the report of the financial condition of (name) as of (date).

Auditors should be equipped—and should be employed—to offer recommendations in connection with method, policies, financing, etc.; to furnish comparative statistics intelligently prepared; to point out how mistakes and waste may be eliminated, and pitfalls avoided.

Of course, *every audit should be a Detailed Audit.* But whether it be *Detailed, Semi-Detailed* or *Balance Sheet,* it can, *and should be made to,* serve as the basis not only of the financial report, but also of constructive help.

With the business man's appreciative understanding of this help, and the cooperation of progressive Public Accountants, Auditing becomes *Constructive* and offers its greatest value.

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

A Spinning Problem.

EDITOR COTTON:

I would be very much indebted to you if you would ask, through the columns of COTTON, for suggestions from your readers as to means for improving our 40s carded yarn, made from Upper Egyptian cotton 1 5/16-inch staple.

We have no trouble in the spinning, but the winding department complains that there are too many pods and small impurities in the yarn, causing the ends to knock off at winding onto the drum; the workers lose time and money, as they are on piece work.

The yarn does not break at the winding, but they state the pods, etc., cause the ends to fall or stop, and they say they have the clearers and detector wires correctly set.

In my opinion, the yarn is very clean for carded work, and it is impossible to remove all of the impurities and pods in carded yarn. I think the winding is at fault in some way, but if any of your readers have any suggestions to help the spinning, we would be pleased to try them. We lowered the stripping cylinder as far as possible on the bale breaker, adjusted the grids on all the scutchers, speeded up the flats on the cards from 2¼ inches a minute to 3¾ inches a minute, and yet the yarn was reported no better.

Our processes are: Bale breaker, Buckley double opener, making an 18-ounce lap, finisher scutcher making a 12¼-ounce lap, three up on the table. 45-inch cards with a production of 300 pounds in 48 hours, 150 grains for 3 yards of sliver.

Card setting: Flats, .010; cylinder to doffer, .007; licker-in to cylinder, .007; mote knives, top .015, bottom .011. Hank roving, 8. Ring twist, 22.16.

We also have complaints of portions of yarn with practically no twist in it. I have tried to locate the cause of this, but without success, looking to spindle oiling, doubtful spindle bobbins, etc. Our frames are tape driven and it may be some fault there, but as we are new on this drive, we have not had sufficient experience. Perhaps some of your able readers who have had more experience with this drive, and possibly remedied this kind of trouble, might be able to help us out.

CONTRIBUTOR No. 1019.

The Falco Cotton Club, of Holyoke, Massachusetts, held its first business meeting of the year on Wednesday evening, October 27th. At this time they made plans and elected officers for the ensuing year. This club meets every two weeks to discuss problems pertaining to the textile industry. The officers for the coming year are: James Partington, president; T. L. Warburton, vice-president; Abbie L. Warburton, secretary, and James Shaw, treasurer.

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Progressive Settings and Other Things

EDITOR COTTON:

Ever since receiving the January, 1926, number of COTTON I have been intending to discuss some of the points brought out in the "How Other Men Manage" department, and as it is only the last of June now, I feel fairly punctual. That is, in comparison to Congress, of course.

On page 275 "B. A. B. (N. C.)" comments on a very interesting question. For the benefit of those who came in late we had better explain that "B. A. B." thinks that progressive card settings are the bunk.

Now I don't blame him for thinking as he does, and so thinking having the courage to express his thoughts. There is no doubt a good sized crowd who will say just as he does. "B. A. B." is correct to a very large extent, but at the same time there are instances where graduated settings are beneficial, and very much so.

On coarse yarns, or more correctly, when running short staple cotton, the straight settings work equally as well as the graduated settings will. However, when running long staple cotton, the graduated settings will give the best carding. I shall explain why a little further on.

Now "B. A. B." says that several men have said progressive settings are best, but none have given the reason. I for one, am included in the list, having made that statement previously, but giving no reason to back it up. "B. A. B." is evidently from Missouri, which is a good place to be from.

It is common knowledge that long staple cotton (when we can get it) is very delicately constructed, and must not be treated with any cave-man stuff. Also, it is conceded that the closer a card is set the more carding action takes place. Once again, the more carding action that takes place, the more thoroughly prepared will be the resulting sliver, which result is what we are after to make everybody happy. From this conglomeration of facts we get the following graduated settings: 7-7-8-8-9. Being closest at the front and widest at the back of the card.

As a straight setting of 9 would be too wide for first class carding on high grade cotton, and a straight setting of 7 would be rather close for the welfare of the clothing and flats, we naturally resort to the happy medium of progressive settings. When I state that a 7-gauge all around would be too close, I base this on the fact that the closer a set of flats is drawn down, the more often it is

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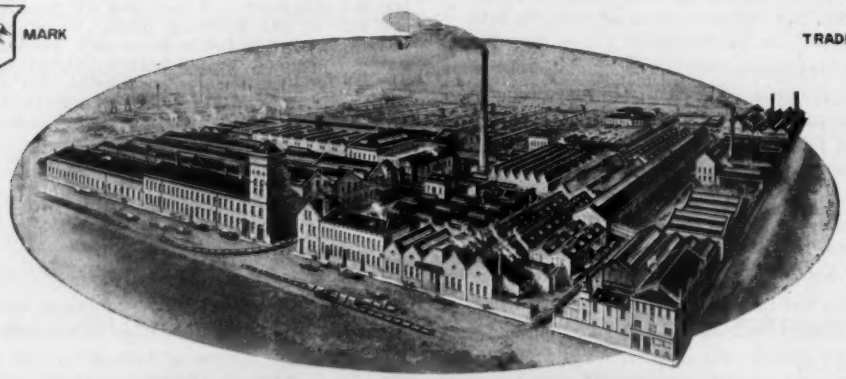

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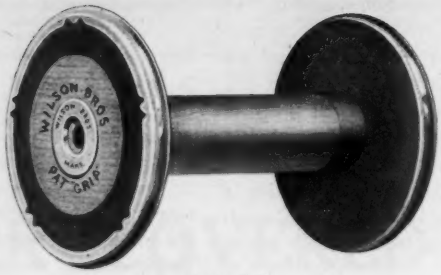

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necessary to grind, due to the extra wear caused by setting close.

"B. A. B." states that some men say that graduated setting is resorted to so as to allow the carding to be done gradually. Just as "B. A. B." believes, this is no reason for a progressive setting. I would rather state that it was an inevitable result of it; somewhat in the favor of graduated settings at that. I want to fully emphasize the fact that progressive settings aren't used for the purpose of setting wider at the back, but to enable us to secure a closer setting at the front. "B. A. B." has the right idea about tight and loose gauges. If you don't develop an even "feel" with a gauge, there is no use using one.

I sincerely hope that the foregoing will be useful to "B. A. B." and any other men who were doubtful as to the whys and the wherefores of graduated settings.

"A. B. (Ga.)" has quite a story on static in the card room. I have only seen one card room where they had any appreciable difficulties with static. The trouble at that mill was simply a case of inadequate humidifying equipment. I have not as yet seen a mill in this sort of trouble that was equipped properly with a good system of humidification.

By the way, a mill man was telling me the other day that they had tried the oil spray in the picker room. He didn't like it at all—claimed it gummed up the card clothing and made a general mess of things. They were using considerably less than 1 per cent. That is all the information I have and I am passing it along for what it is worth. I am sorry that I cannot give any personal observations on a subject of such momentous issue.

In the Februrary, 1926 issue, on page 379, last paragraph, "T. A. D. (Ga.)" says: "In my opinion the greatest reason why some people cannot get good results from 1-inch staple on 30s warp yarn in the spinning is not in the cotton but in the way it is worked along the route until it gets to the spinning, and then the way the spinning is kept up and run, conditioning the atmosphere, controls, etc." "T. A. D." is absolutely correct. There is not the least reason why 1-inch cotton cannot be run successfully for 30s warp yarn. It should give a very good break also.

In the March issue a contributor tells of a case that might produce a good laugh if it were not for the fact that it is a pitiable state of affairs when a mill has to call on an outsider to oil their machinery. I shouldn't have made any remarks about this incident, but it is an excellent example of what ails hundreds of cotton mills today. The mills cry out that they cannot operate at a profit. How can they when they are managed by, and operated by men who are thoroughly and inexcusably incapable. What a showing up that bunch must have received when they had to ask a stranger to put a drop of oil on the evener motion. That crowd must have been as bright as a superintendent who told a friend of mine that production was increasing, as they were making a lot more cases in the shipping room.

I am very much interested in the letter from "G. D. S.", page 476 of the March issue on the question of the remedy he used for his defective cones. Undoubtedly, the readers will remember how "T. A. D." was ridiculed for his suggestions, even though they proved correct. The moral is, "Don't stick out your chest too far, you'll snap the buttons off your vest."

At the time "G. D. S." asked the question and explained it, all the symptoms of improper humidification were prevalent and I said as much. I also added a little sarcasm for the benefit of his assistants. Now, instead of blustering my way out of it, I want to apologize to "G. D. S." I will also freely admit that I learned something entirely new to me. It had never occurred to me that the builders had constructed cones having the wrong curves.

I hope none of the readers are losing any of their peace of mind worrying about "frictional contact shortening the strand" and how many "fibers to the cross section are passing through the rolls." Forget that stuff. It is all applesauce. Naturally, we will get frictional resistance on the front rolls. We are bound to get friction, due to the weights suspended from the bearings. Just keep the rolls well oiled and clean and let them run. If you have shell rolls or ball bearing rolls that is your good luck. With all our frictional resistance and general going to the dogs, together with the popularity of the bobbin lead frame, we can still spin 150s on the ring frame. Why worry?

This paragraph is devoted to "B. A. B." He has a letter in the March issue, page 479. He noticed wrong. It was "C. C." and not "T. A. D." who referred thusly to "Experience's" tootsies. It is no use to argue on licker-in grinding. Any good carder will not advocate the practice. The sand box method you refer to is not grinding. It is simply a makeshift method like the soft brick and the hard pine and emery. Simply a means of trying to get a little more use out of a bad licker-in. "B. A. B." wants to hear from some older fellows. Must mean Moses and Methuselah. Hasn't "T. A. D." had long enough experience to qualify?

C. C. (N. J.)

"Old Timer" Gets Another Bouquet.

EDITOR COTTON:

In the April issue of COTTON a compliment has come my way, and from no less a person than "Old Timer," and I could not have wished it from a better source.

"Old Timer" exemplifies the right spirit; he is prone to throw bouquets at others which rightly belong to him. Like the writer, his writings prove that he is a student of the universal laws; he understands the law of compensation and the law of attraction; he knows too, that nature allows man to play with her laws all he likes. Man may make the most ridiculous mistakes, the most absurd applications of the law and suffer because of it, if he is too stupid to correct his errors.

"Old Timer" is ever pointing out the holes into which we are likely to fall, and I for one, am willing to confess that his warnings have cleared me of many, and I am sure the boys will also admit this.

In the 13th paragraph of his article he states: "I only wish it were possible to have that Rhode Island man tell my readers the knowledge he has gained by studying what he has read and how much knowledge he has gained by entering the discussions in COTTON."

My first letter to COTTON was in the year 1913, at which time I had in hand three diplomas for student work I had completed. COTTON keeps us all up-to-date. The contributions to this journal are not equaled. For instance, turn to page 521 of the April issue and you will find a splendid article entitled "A Description of Long Draft Spinning,"

which to my mind will set many mill men to thinking. The writers are honest when they state in the 19th paragraph: "It will be seen that the yarn from the 'Casablancas' system broke 1.3 pounds weaker on the average. However, this yarn was .58 of a number lighter, which would virtually outbalance the difference in the breaking strength." See the point? See the spirit?

When the article was written evidently the writers had in mind one object only, and that was to steer the manufacturers on the right track. That is what "Old Timer" is ever trying to do, and may he live long and write on.

WASH (R. I.)

Twist Per Inch.

EDITOR COTTON:

A very important factor in the successful operation of a cotton mill and in finding the production and cost per pound that is paid in wages is the amount of twist per inch applied at the respective machines. Say, for instance, a twist gear is applied at the fly-frame or ring-frame or perhaps spinning mule which would give a greater amount of twist. This of course would decrease production and surely increase the cost in proportion.

Taking an extreme case, let us make a change on a spinning frame from soft twisted yarn to say, extra hard twist, and to do so we have to apply a twist gear half the size of the previous one. It can be readily seen that the roller-speed is reduced by one half, and of course we reduce the production correspondingly for the same numbers, or counts, and in addition the spinners' pay would be practically doubled, that is, cost per pound.

The foregoing principle is sometimes used as a basis of a haphazard calculation for making a comparison between the cost in production of one number of yarn and that of another number, but similar yarn. Assume for example, it costs 30 cents a pound to produce 34s twist from American cotton and we want to ascertain the cost per pound for 40s twist. The following calculation will, I think, solve the difficulty: e.g.

$$\frac{30 \times 40}{34} = 35.3 \text{ almost.}$$

That is a little over 35 cents, showing an increase in cost per pound due to the reduction in weight, which is produced owing to finer numbers. Going a little further with our calculation, we find the increased cost due to the loss in production, through the increased twist per inch, and we arrive at the following:

$$\frac{35 \times \sqrt{40}}{\sqrt{34}} = \frac{35 \times 6.32}{5.83} = 37.9$$

Almost, or in fact, we can safely say 38 cents per pound.

I would like to mention here a very peculiar feature on a ring spinning frame, and that is the effect of the winding principle upon the twist. Now I think most spinners will understand that for every coil of yarn that is wound on a bobbin during spinning there is a loss of one twist in the yarn and also that this loss in twist, due to the method of winding on, is again regained during unwinding if the yarn be unwound over the nose of the bobbin.

Of course this loss of twist is never noticed to any great extent and is often ignored when making any twist calculations, though sometimes it is figured in the calculation, by taking the folowing rule:

Take the average circumference of the winding-on part of a bobbin and divide this into inches delivered per minute. This result represents the loss per minute in twist and is subtracted from the revolutions of spindles per minute.

Now divide the last result by the inches delivered to obtain the actual twist per inch during spinning. As an example say, spindle revolutions 8000 per minute. Front roll delivers 400 inches per minute. Average circumference of winding-on part of bobbin is 2.8 inches.

(a) $400 \div 2.8 = 143$ revolutions lost.

(b) $8000 - 143 = 7857$.

(c) $7857 \div 400 = 19.6$ turns per inch.

The 7,857 equals the revolutions of the ring traveler and, by the way, it is for this reason that some claim that the traveler inserts the twist. The loss of twist therefore, will be equal to

$$\frac{143 \times 100}{8000} = 1.7 \text{ per cent,}$$

and this is a much less amount than the loss caused through slippage of tapes on spindles. Here I may say the worst trouble regarding this loss in twist due to winding-on is that its amount varies and it is always greatest when winding is occurring on the smallest diameter of the bobbin. At this point there is always the greatest strain applied on the yarn due to the latter having to drag the traveler around the ring at a great angle.

Of course it can be readily understood that with a full bobbin of a slightly less diameter than the ring there is bound to be very little strain imposed on the yarn when dragging the traveler around.

So much for twist per inch, and I hope that some of our interested friends will find some little benefit from my remarks.

REX (R. I.)

A Ball Bearing Comb Box for Cards.

EDITOR COTTON:

Everyone who works around a card room will be interested in knowing that a comb box has been invented that will not throw oil or wear out, and that requires lubrication only four times a year. This new comb box has all the moving parts mounted on ball bearings, which are packed in a moderately heavy grease.

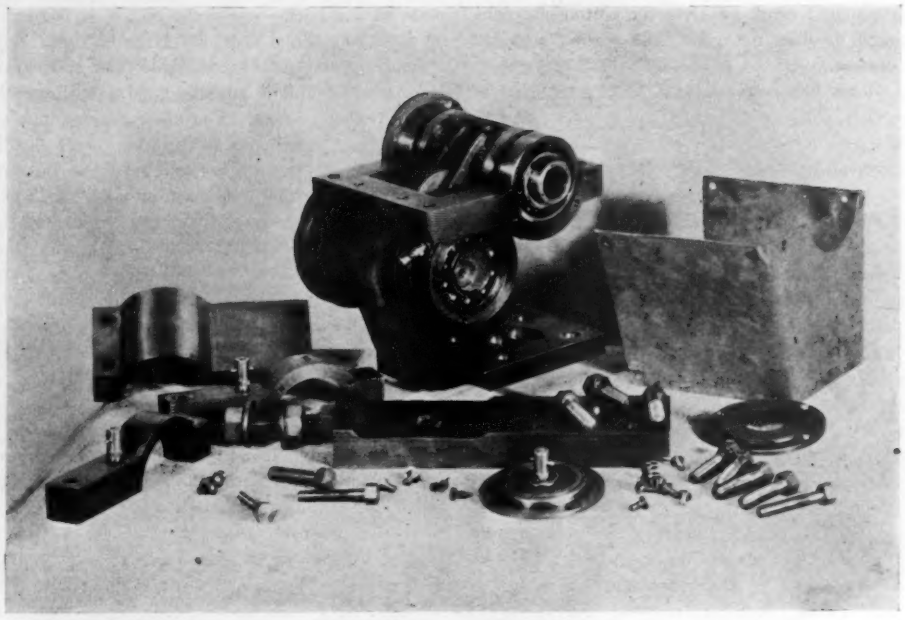
The regular comb box requires a special oil, and special attention in oiling. Too little oil causes rapid wear on the moving parts, and too much spatters out on the floor and machinery. Furthermore, when worn, the regular comb box makes a terrible racket, and splashes oil worse than ever.

With the ball bearing box, the little puddle of oil by the card is a thing of the past. This puddle not only represents wasted oil, but causes nearly all of the sweepings in the card room to go into the "oily sweeps" bin.

Leakage from the comb box creeps out on the comb shaft and comb, and gets in the doffer, clogging the cloth ing, and eventually softening the foundation to the permanent injury of the clothing.

In mills where the card room is not on the ground floor, serious damage is often done by oil thrown from comb boxes seeping through the floor and dripping on work in process on lower floors.

The ball bearing comb box is extremely simple in principle and construction, as may be seen from the illus-

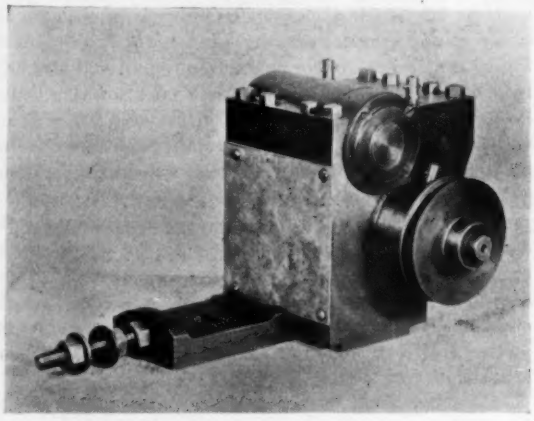


The Comb Box Disassembled.

trations. These are taken from the inventor's original model.

The oscillating motion is obtained by means of an eccentric and crank. The eccentric is driven by the same sheave pulley used on an ordinary box. The eccentric shaft is mounted on two annular ball bearings, and the eccentric itself is a ball bearing.

The crank, which is placed on the comb shaft, consists of a sleeve, which can be slipped over the shaft and



The Assembled Box.

secured by set screws, and on this sleeve is a yoke supporting another ball bearing. This bearing is connected with the eccentric bearing by a connecting rod which houses both bearings.

All bearing housings are fitted with metal grease tips; the same system as used on a number of automobiles, and lubricant is applied with a pressure gun.

The whole assembly is enclosed, to prevent fingers being caught in the moving parts. The inclosure is not necessary to prevent oil spattering, and the box will operate equally well with no covering.

This box is the invention of H. O. Dyess, of Columbus, Ga. He has applied for a patent on it.

Mr. Dyess formerly worked in a card room, and became impressed with the desirability of having a comb box free from the numerous troubles common to the ordinary boxes. Upon the completion of this box, he had it tested out in one of the Columbus mills, and after running it over three months without any attention, the management were so pleased with it that they ordered a complete equipment for all their cards.

This endorsement was very encouraging to its inventor, and he has made arrangements to put the box on the market through the Aldrich Machine Works, Greenwood, S. C., who are manufacturers of a number of cotton mill specialties. E. C. (Ga.)

Suggestions for Comber Layout.

EDITOR COTTON:

This is in reply to the letter of "V. F. (N. C.)," in the September issue of COTTON, asking for information and suggestions that will help him in connection with the combers he is having installed in his mill. I note that he expects to make 30s and 40s from 1 1/16-inch Middling cotton. His present lay-out, as given rather completely in his letter in the September number, appears to me somewhat varied, but then I do not know the local conditions, and I shall have to assume a few things. For instance, he starts with an 18-ounce lap on the breaker picker and finishes an 11-ounce lap for the card. He could not have or wish for a lighter lap if he were spinning 150s or 200s.

"V. F." must be after production, as he starts good with an 18-ounce lap on the breaker picker, and states the production on the combers will be 210 pounds per day. Of course, he drafts the lap down to 11 ounces, which he can probably afford to do as the cotton has been well opened

and cleaned by having been put through two vertical openers, and, as a whole, I think he gives the cotton sufficient picking, although he does not go to the highest possible speed on the beaters.

In regard to his licker-in speed of 440 r.p.m., that is too fast, especially with an 11-ounce lap in back; 350 to 375—say, 360 r.p.m. is plenty fast enough. The licker-in will get dull with an excessive speed. In his card settings as given in his letter, I think he would do well to change the setting of the feed plate to the licker-in from 12/1000 to 7/1000; the mote knives from 5/1000 to 7/1000; licker-in screen to licker-in, from 34/1000 to 7/1000; and set the cylinder screen to cylinder, back to front as follows, 34/1000, 34/1000, 34/1000 and 68/1000.

Now, in reference to the combing process, we know these are new machines he is installing, and I want to advise him to set the rolls on the sliver lapper as wide as he possibly dares, for the wider the setting, the evener the lap. He must bear in mind, though, that there is a limit. For 1 1/16-inch stock, I would recommend 1⅞-inch and 2-inch settings. Once he has the right weight lap to suit the production needed for the ribbon machines and combers, he need not bother sizing that process daily, as he can kill two birds with one stone and do all the lap machine sizing on the ribbon machine. All the draft necessary on the sliver lapper is between 1.50 and 2.00, say 1.75 draft.

He should train his operatives to piece or make the ends well whenever an end breaks or runs out, and when starting a new lap, put the ends over the spool the full width of the latter, so when that lap runs out on the ribbon machines, the tail end will not be bunched, and the lap stop motion will work more accurately and less waste will be made.

If the ribbon lapper is four-head, which I presume it is, then a draft of 3.50 to 4.00 is sufficient, or 5.5 to 6.00 for a six-head machine. The operative should be trained to put the end of a new lap so it will lie over the ends of the old one running out. By doing this, if there should be any lumps or bunches coming through the rolls where the piecing was made, it is easy to pick them out without entirely breaking the web on the curl, for he will always find any bunches on the top by following out this method. I would suggest that he size morning and afternoon daily, say 9:00 A. M. and 3:00 P. M., making an allowance of five grains either side of the standard weight. If he will look on pages 391 and 393 of the February, 1925, issue of COTTON, he will find a couple of tables for checking weights and gears on the ribbon lapper which I sent in to COTTON, and which will save hours of labor and pounds of production.

Another good stunt is to have some small platforms made for the ribbon machine alleys, so the operatives may stand on them and put in a new lap easily, without having to lean over the sliver curl and risk breaking the web on the latter. He can use his own judgment as to the height of the platform according to the height of his operatives. A good rule is not to allow the end of the lap to hang from either the ribbon machine or the comber creel more than one inch; it looks untidy and makes waste, for it is a safe bet that if there is from three to six inches hanging down, the tender is going to trim that amount from the lap because it is soft and uneven. Another good plan is not to make too big a lap, for after a certain diameter is reached, they come soft and the re-workable waste goes up. As soon as the lap gets about ¼-inch higher than the lap plate at the back—where the cotton is beginning to wind on the lap—then it is plenty large enough. Soft laps size irregularly and make more waste than good firm laps. The lap brake should be kept in good condition, whether it is a clog or band brake. You know the result when the foot-brake on an automobile is slipping. Just as there is a relation between the pickers and cards, so the same relation exists between the lap machine and the combers. The settings I would suggest for the ribbon machines are 1 5/16-inch, 1 7/16-inch, 1 9/16-inch. I would suggest only that he try these as they will give him a chance to open or close the rolls 1/16-inch both ways, which I think he will be able to do without detriment to the work.

Now, I am not going to offer any comber settings, simply because the machines (Model D-3 Whitin combers) are new, and are a new make, but of the Nasmith type, so it would be foolish to suggest something on a machine when no trouble has been experienced. I would suggest that he follow the settings put into effect by the fitter, to see if the results are satisfactory for the grade of cotton used and the production required, for he must remember that cotton cannot be rushed through the comber, or a low amount of waste taken from it, if quality is to be expected. If, after he gets going, he will write in case things are not going well on this process, then I will be only too glad to suggest something. It must always be remembered, though, that if combed work is desired, the half lap and top comb must be given a chance to do their work and penetrate the cotton.

The settings for the draw box rolls are from ⅛-inch to 3/16-inch over the staple. In "V. F.'s" case I would try the 3/16-inch setting over the staple. He should use springs in the comber sliver cans no matter if he only has a 10-inch can; I know a few mills that tried to get along without the springs, but they were only too glad to buy them after changing over onto combed work.

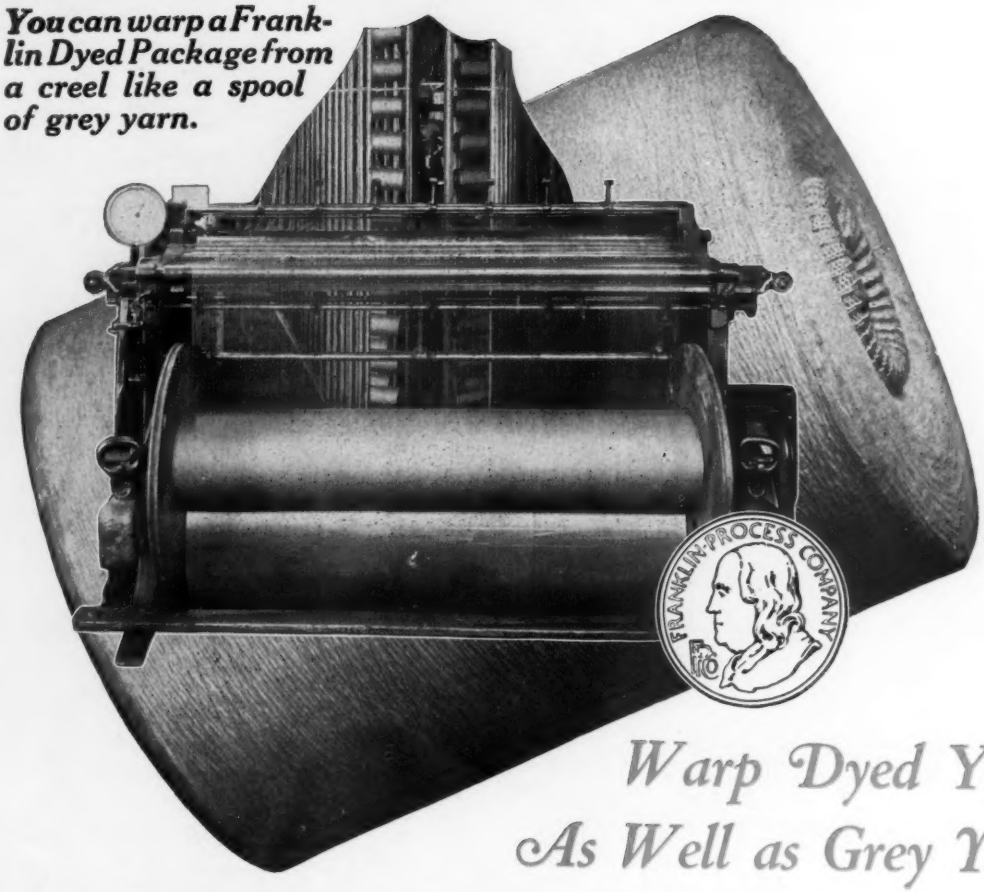
If he has 6-inch guides on the drawing frame, I would advise getting smaller ones, say 5-inch, so that all six ends will be kept close together at the front and it will also help keep down the fly that is often seen on a drawing frame cover. Also, I would suggest that he keep the breaker and finisher drawing sliver the same weight when using the combers, as it helps to get the finisher sliver more even and gives a better chance to keep it evener. I am sure that "V. F." will have to change the weight of the drawing sliver and slubber hank roving, for if the comber production is to be 210 pounds per day, then he cannot help it, because the comber sliver will be heavier than the drawing sliver is now, and I would not advise speeding the comber draw box front roll too much. Here is the lay-out I would suggest to him:

I would cut out the intermediate picker and make the breaker lap 14 or 15 ounces and the finisher lap 12 or 13 ounces to suit my production. If he should keep the intermediate, then he should set the Kirschner beater so the setting will be the length of staple from the bite of the feed rolls to half-way down the beater pin and 1/16-inch from the knock-off plate. I would not set any of the other beaters more than 3/16-inch.

The licker-in speed should be 400 r.p.m. with a 12-ounce lap and 425 for the 13-ounce lap.

The card sliver could be heavied up to 45 grains per yard instead of 42 grains that he is now making. That

You can warp a Franklin Dyed Package from a creel like a spool of grey yarn.



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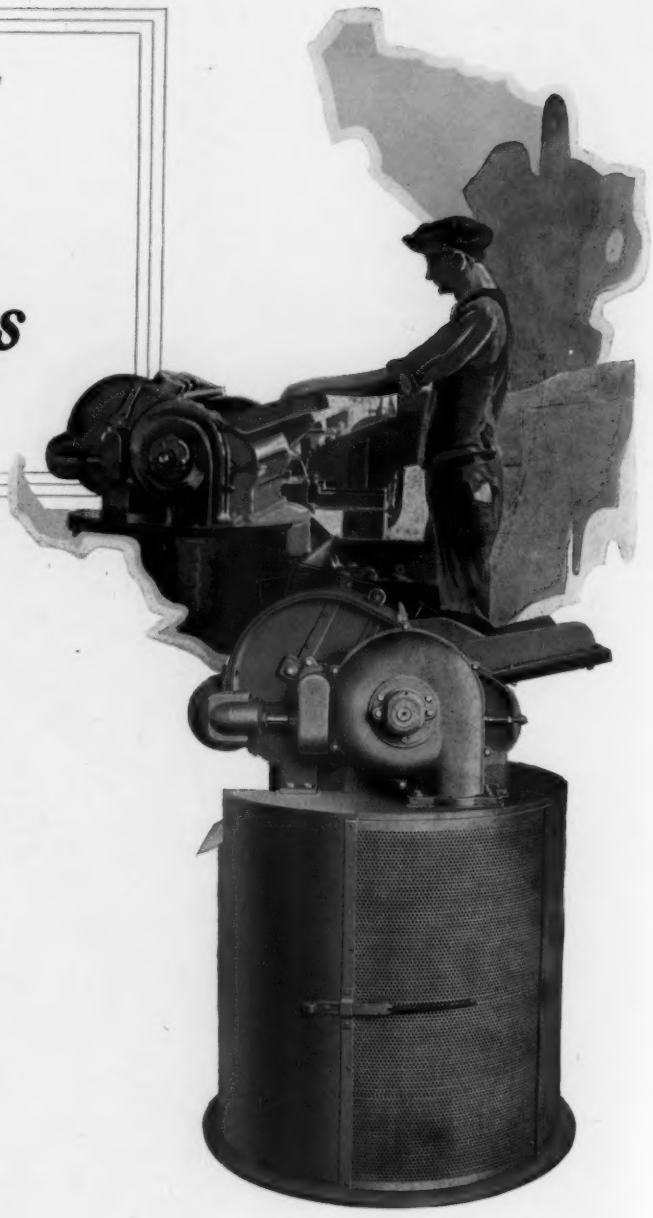

You can save money for your mill

—by reducing the amount of waste roving.

—by not cutting staple.

—by not cutting bobbins.

—by not having to rework roving waste.

—by letting your spinners spin, instead of cleaning bobbins.

—by having cleaned bobbins ready for doffing.

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would help to keep the production up, and would be taken care of at the combers.

I cannot give a definite weight lap for the sliver and ribbon machines, for he did not state how many ends behind the sliver machine or how many heads on the ribbon. However, he should not go over 2.00 draft on the sliver machine and 4.00 on the ribbon machine for a four-head machine, or 6.00 on a six head machine.

Quality and breaking strength are our first two considerations, and we get them, and our sliver lap is 575 grains per yard and the ribbon 615 grains; we have a draft of 1.67 on the former and 3.51 on the latter. We do not card a 45-grain sliver as I mentioned a while ago, but 35 grains instead, as we are after quality and breaking strength.

"V. F." did not state how many heads there are on the combers, six or eight, so I will assume eight, as it is a Whitin comber with the waste coming from every head out at the center of the aspirators at the back. I advise him to use a medium weight lap and not too heavy a feed, and give the machine a chance to comb. Also, he should not speed up the comber too fast to attain production. With 100 nips per minute he should not have much trouble getting his production.

I have just been figuring what draft to recommend for the combers. Using a 14 per cent waste percentage as a basis, I find that he will have to use at least 60 draft with a 500-grain lap to get under 60-grain sliver. Of course, if he takes out more than 14 per cent, that will help him all the more to make the sliver lighter, and if necessary draft a little more in the draw box. I would not recommend more than 160 r.p.m. for the front roll, and reduce the roller weights if that speed is reached. The following are some drafts and slivers that I made out and which may be useful to him:

Lay-out Number	Weight Lap	Lap Minus Waste	Waste Per Cent	Draft	Sliver
1	600 gr.	500 gr.	14	60	69 gr.
2	575 gr.	490 gr.	14	60	65 gr.
3	550 gr.	473 gr.	14	60	62 gr.
4	500 gr.	430 gr.	14	60	57 gr.
5	600 gr.	510 gr.	14	65	64 gr.
6	575 gr.	490 gr.	14	65	61 gr.
7	550 gr.	473 gr.	14	65	58 gr.
8	500 gr.	430 gr.	14	65	53 gr.

Assuming that the nips per minute, etc., will allow him to do so, "V. F." could use the No. 4 or No. 8 lay-out and draft either of them to a 55-grain drawing sliver, if occasion required it, on the breaker drawing, and then use 6.00 draft on the finisher with a 55-grain sliver produced for the slubber.

I would suggest the following as a lay-out on his fly frames and spinning, using a 55-grain drawing sliver.

WARP YARN.

Slubber	.65 hank	4.3 draft
Intermediate	1.75 hank	5.38 draft
Speeder	5.50 hank	6.28 draft
Spinning	30s yarn	10.9 draft

FILLING YARN.

Slubber	.70 hank	4.63 draft
Intermediate	2.00 hank	5.71 draft
Speeder	6.80 hank	6.80 draft
Spinning	40s yarn	11.76 draft

"V. F." will note that the filling lay-out is the same as the one he is using and outlined in his September letter. I think it is a pretty good one, and evenly proportioned for a 55-grain drawing sliver behind the slubber.

The front roll speeds which he gives for slubber, intermediate and speeders are all right and not excessive, with a good chance to change if the occasion calls for it, the same remark applies to the spindle speed. The turns per inch on the roving I thought were high and would suggest a multiplier of 1.30 times the square root of the hank roving. The twist per inch on the spinning is okeh.

He should not worry if his comber sliver varies one or two grains either side of the standard. Sometimes he may find a larger variation, because we all do, owing to the large draft in the machine, the lap sizings varying, the waste percentage varying owing to different batches of cotton coming through, some containing more short fiber than other batches, the settings and timings getting out, and the sizings from the different combers—waste sizings—varying.

I would suggest not to set the picker beater any wider than 3/16-inch.

This information and lay-out may not turn out to the letter, for "V.F." will have to consider local conditions and other points that turn up. Anyway, I hope the foregoing assists him, and should he have any trouble with the combers, I will be only too glad to help him if he will give us the information regarding his difficulty.

JOCK (MASS.)

EDITOR COTTON:

In response to the question of "V. F. (N. C.)" who is installing combers, the lay-out of his card room seems ideal for the installation of combers as he apparently has plenty of cards and can run a fairly light sliver.

In regard to his picking, it seems that there are too many beatings given the stock and I would suggest cutting out the intermediate picker. Using Middling cotton with two vertical openers the stock should be well picked with a two beater breaker picker and single beater finisher. The settings and beater speeds seem all right. I run my beaters faster, but the lap run is heavier, being 12 ounces on the finisher.

The card speeds he gives are all right, if they are necessary, but I would run the doffer faster, probably up to 9 r.p.m. Of course conditions of the cards will govern this, but a well-carded sliver could be produced at 9 r.p.m. if the cards are well ground. The feed plate to licker setting seems very wide. I want my feed plate up as close as possible and set to a 7/1000. I would reverse the licker settings as given by him, making the feed plate to licker 7/1000, and the licker to the cylinder 12/1000. The carding is done at the feed plate while the cylinder simply takes the fiber away from the licker, to card again at the flats. There is no need of a close setting between the licker and cylinder. It will pay to have the cards in first-class shape and it may be found necessary to draw over the cylinders.

These changes that I have recommended are very slight as I see no reason why "V. F." should not be getting perfect work from his present hang-up, only I believe he could make quite a gain by speeding up a trifle, without the least detriment to his work.

From the cards the sliver should be put through either a sliver lapper and ribbon lapper, or else through a drawing frame and a ribbon lapper. The sliver lapper is preferable to the drawing frame as you get 20 doublings instead of six. Sometimes only a ribbon lapper is used, but

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the sliver lapper or drawing frame preceding it is very important. If a drawing frame is used it can be set the same as the first drawing. If a sliver lapper is used the rolls should be opened as wide as is mechanically possible, as the bulk of cotton is better drawn by giving it all the space possible. This is a radical opinion and will bring a storm of protest from some quarters. The only answer is try it, and if it is not giving the best work, close the rolls up to suit your own ideas. The knock-off motion should be kept in perfect condition on the sliver lapper and if it be electric, the oil put on the machine must be watched, for if the insulation gets soaked with oil in a year or two your sliver lapper will be the cause of very bad work. With a card sliver of 42 grains the sliver lapper should produce a lap of about 450 grains, 9¾ inches wide. This gives a draft of slightly less than 2.

The polished parts of the sliver lapper should be polished once a week at least so there will be no friction on the slivers. The friction on the lap head should be carefully adjusted so as to make a lap neither too hard nor too soft. Governing this point is the only thing that makes a drawing frame more advantageous than the sliver lapper. With the present method of building laps, and this applies to pickers as well, that is with a friction let off, the results are highly unsatisfactory. I have never yet seen a lap made that was even, and I don't believe any one else has, if so I hope they will tell us how they do it. For this reason the laps on the back of the ribbon lapper should be of varying size.

There are four laps at the back of the ribbon lapper and one should be full, one ½ full, etc. Allowing the operative to put up four full laps at once should not be tolerated. The piecing made when putting in a new lap is probably the most important detail on this machine, as a careless operative here can do more actual damage than anywhere else. The rolls should be set to deliver a perfect web and I would set 1¼—1-3/16—1⅛ if the cotton is good running staple. The plates on this machine should be highly polished and attended to regularly. The leather rolls should be varnished regularly and moved to the back each week, putting the new rolls in front. Care must be taken with the clearers or there will be excessive roll-ups on the front rolls, which are disastrous. The weights must be set even on all rolls and care taken that the weight relieving motion does not slightly raise the weights. The lap produced should be about 450 grains.

The care given these preparatory machines is all important and practically governs the quality of the combing. A good fixer will watch these machines and take care of the details and thus relieve himself of a great deal of bother at the combers.

Any mill superintendent cannot realize too strongly the importance of the man he puts in charge of his combing department. Get the best. Such a man will have his own ideas regarding the setting and timing of his combers, and no one is competent to dictate to such a man. Many comber men would go to a mill and start the combers up on certain settings and then as time went on would gradually change them to improve the work. If that man were to give his settings other comber men would tell him where he was wrong, but the results count, so I say get an experienced comber man, require him to give results and don't go to him every week or two to change some setting simply because someone says it is advisable. Let him try his own improvements; he'll do it, if he is any good.

The waste percentage must be determined by the quality of the yarn desired, and the quality of the cotton being used. 20 per cent seems to give good running work on the comber, and should make a perfect yarn. The leather detaching rolls should be carefully watched, and varnished once a week. Grease should be used on them instead of oil, and used in small quantity once a week. When these rolls have been recovered they should be calipered and if they are not perfect should not be used. Oftentimes a careless roll coverer gets one end larger than the other or a high place in the middle and bad piecing is the result of using such rolls. The fixer should keep the half laps in good condition, picking and straightening needles as often as need be. The operatives should be required to pick the top combs twice daily. The usual practice is to have an oiler to oil the gears and cams, and let the operatives oil the rest of the comber. Oiling is always important.

It will pay to use spring bottoms in all the cans containing combed sliver as this is very susceptible to stretch. The roving boxes should be clean and kept so and the roving packed in rather than thrown. Lining old trucks with paper is not a practical solution as the paper gets torn and dirty and the lining is soon worse than none. New trucks is a better solution if the present ones are not in first-class shape.

The roving lay-out seems all right. Is it necessary to have two sizes of intermediate roving for 30s and 40s yarn?

Mixed roving causes bad work and unless the entire mill is running only these two numbers of combed yarn it would seem better to make one intermediate roving and two speeder rovings. M. W. H. (MASS.)

Southern Textile Association Meets at Greenville and Visits the Exposition.

(*Continued from page* 124.)

in a majority of cases has to check only the 'Yes' or 'No' column, although a space is provided for 'Remarks.' For example, take a few of the questions pertaining to internal resistance motors: (a) Motor tight on base; (b) brushes tight; (c) brushes burned; (d) resistance spools burned. All the inspector has to do is check either 'Yes' or 'No' according to what he finds.

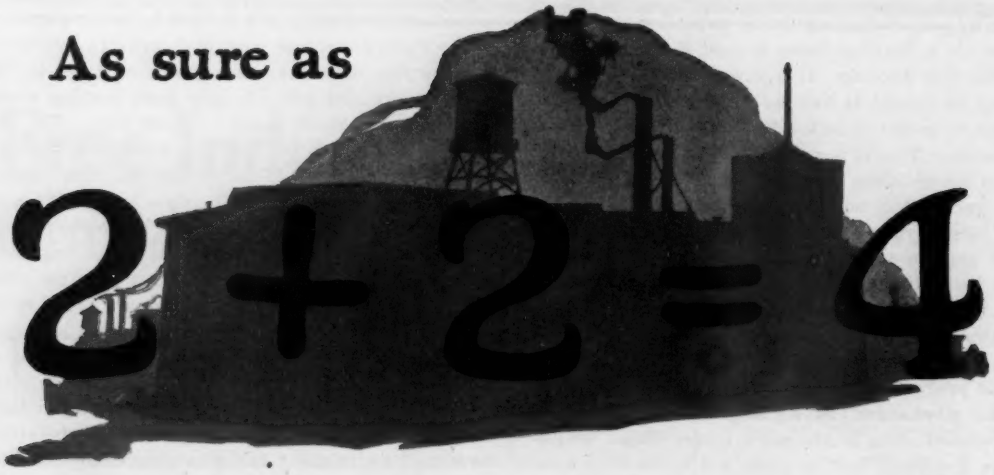
"Considerable time was spent on the subject of the frequency with which inspections were to be made. Some items are inspected daily, some weekly, monthly, bi-monthly, every six months, and so on. After the time element was determined a tickler file was arranged with all inspection forms under their proper date for a year ahead.

"As to the subjects covered by the inspection, in addition to the work on the manufacturing machinery, the schedule calls for reports on boilers, steam engines, pumps, motors, mill roof, windows, heating system, shafting, hangers, counter pulleys, elevators, sprinkler pipes, and so on.

"The inspector is a man thoroughly versed in the maintenance of all machinery, but is not a specialist on looms, spinning or carding machinery. In other words, this man isn't supposed to know whether a card is set right or whether a loom is set to our standard settings—that is an operating inspection, not a maintenance inspection.

"Coming now to the loom inspection, at present, we have three loom reports; two for a bi-monthly inspection

As sure as



This is a lesson in the most elementary arithmetic.

Problem (1)—Because of the high humidity necessary in textile mills fungi, or as it is most often called, "dry rot," invariably attacks and destroys untreated timbers and sub-flooring used in their construction.

Creo-pine Sub-flooring

Solution of Problem (1) — Creosote oil is a specific against "dry rot." It poisons the food upon which they feed, and makes properly treated timbers absolutely immune to their infection.

Explanation of Solution (1)—Note: Although creosote oil is a powerful specific, it must be scientifically applied to make cotton mill timbers impervious to "dry rot." To prevent fungous infection or decay, the creosote must be able to penetrate the wood deep enough to form a continuous exterior shell of poisonous treated wood deeper than any surface checks which are likely to develop, and to retain its toxicity or poisoning power under continuous service.

Suggestion: Creo-pine sub-flooring is treated by the S. W. P. vacuum pressure process, which first draws out all the sap and then forces the creosote oil deep into the pores of the wood under tremendous pressure.

The result is a sub-flooring impervious to "dry rot." That is why Creo-pine is the standard sub-flooring in cotton mill construction.

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and one for a monthly inspection. I say 'at present' because experience shows the necessity of changing the time element, and sometimes the list of items to be inspected.

"The first loom report—bi-monthly—covers:

a. Crank Shaft
   1. Bolts out of box cap
   2. Bolts loose in box cap
   3. Box loose
   4. Box worn
   5. Shaft worn
   6. Pittman eccentric pin worn

b. Head End Gear
   1. Worn
   2. Loose on shaft
   3. Guard broken
   4. Guard missing.

c. Loose Pulley
   1. Bushing worn.

d. Cam Shaft
   1. Boxes loose
   2. Bolts loose
   3. Bolts missing
   4. Boxes worn
   5. Shaft worn
   6. Gear worn
   7. Gear loose on key-way
   8. Cams worn
   9. Treadle rollers worn or stuck.

"The second loom report, which is also bi-monthly, covers:

a. Rocker Shaft
   1. Is shaft worn

b. Motor-Driven Looms
   1. Pinion loose
   2. Pinion worn
   3. Friction disc gear teeth worn
   4. Setting of motor pinion o. k.
   5. Motor tapered shaft worn.

"It will be noted that every one of these questions, covering the points in detail, can usually be answered by a check in either the 'Yes' or 'No' column.

"The third loom report takes motor pinions alone which are checked up monthly to see if they are tight on the rotor shaft.

"These reports are made out in duplicate, the original being turned into the main office and the duplicate to the overseer in whose room the inspection was made. The inspector's responsibility ceases when he turns in the reports. The original is held in the office until the duplicate is turned in, signed by the overseer, saying the work as shown by the report is completed, then the two are filed together.

"The maintenance inspection of looms is, of course, in addition to that regularly done by the fixers, and in some cases they overlap, and purposely so. The fixer's inspection covers certain items to be gone over daily. He will have certain things to do on each day. For example, on Monday, he will look for loose cam shaft boxes and caps, look for loose swords, and clean the take-up gears on nine looms. On Tuesday he will look for loose crank shaft boxes and caps, loose let-off gears, loose arches, and loose whip roll stands. And so on for every day in the week except Saturday.

"Machine cleanliness is an important factor in both inspections, that is, for the maintenance men and the fixers, because if the loom is covered with lint and dirt the psychological incentive, as well as the ability to see missing and loose bolts, etc., is missing. To overcome this all looms are blown off every day and each loom thoroughly

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A score of other Acme devices for stitching, tacking and binding, etc.

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scraped and cleaned by hand when a warp is run off.

"In order to know the results or advantages of the plant maintenance scheme of 'preventive medicine', we have to take repeated loom tests. The first tests, before the inspection reports were started, showed the stops per loom per hour as high as 1.2 to .8, whereas subsequent tests averaged around .3; we have had some as low as .2 and some as high as .4. The reduction of loom stops was of course not due entirely to the improvement in the mechanical condition of the looms, because the maintenance inspection of all machinery throughout the mill contributed its share.

"In order to be assured that the upkeep of the looms will be maintained, tests are taken at least once a month, and more often if the overseer has any doubts about certain sets of looms.

"Looms with only .3 stops per loom per hour compared with .8 stops are certainly going to produce more cloth, better cloth, lower costs, and better satisfied workers, and, as mentioned at first, the 'advantages of well-kept machinery' are fairly obvious, so I have simply tried to describe one method of striving for 'well-kept machinery'."

Modern Machinery, by T. A. Hightower.

The next speaker was Mr. Hightower, who discussed the general subject of modern machinery, saying in part:

"The cotton mills of the South are more modern in their mechanical equipment than the mills of any other large district of cotton textile manufacture.

"I do not mean that there are not individual mills elsewhere to compare with our best; but as a whole our machines are modern—more so than those of any other large group of cotton mills.

"Our pioneers and their successors have bought the best they could get. Because they were later in the field than the average mill builder of older textile centers, so we have a better average mechanical quipment.

"But in these days of industrial progress, what is new and modern today becomes old and out-of-date tomorrow.

"As manufacturers, we must ask ourselves if the machines that have served us so well the past few years will keep us in the front in the years to come. Is there something new in carding, spinning or weaving that so effects costs of production that its possessor will have a manufacturing advantage?

"I shall hardly answer this question comprehensively in this short talk. I shall not attempt to do so in detail. But I have noticed some things in industry that may help us in reaching a decision on this question.

"Many mills in the North with fairly modern equipment were driven to the purchase of more productive machines by a shortage of labor.

"With the growing industrialization of the South, are we nearing the time of a limited labor supply? More machines per unit of man-power will be a necessity then.

"Higher wages have brought increased labor costs. American standards of living for the working people are more likely to push those costs higher than to bring them down.

"The only solution is in increased production per unit of labor. It cannot be done by crowding the worker. It must be done by improved machinery. These machines must be more and more automatic in operation and re-

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The Ideal Winder for Rayon. Can also be used for Silks and Fine Mercerized Yarns.

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quire less attention from the help—thereby increasing the product per worker and cutting down the unit cost of labor involved.

"Foreign competition will increase with the reestablishment of European industry and the development of the East—in our American markets perhaps; certainly in foreign lands where part of our American cotton goods now find a market.

"America has met such competition in other products by improved machinery and increased product per unit of labor. We have done so in textiles so far as we have succeeded in foreign markets.

"The English investigators who came over here to find out why we produced goods so cheaply in spite of the high wages pointed out all this so clearly we should realize we cannot afford to stand still.

"Then there is the question of a better product. Many of the improvements made by our machinery builders are designed to make better yarn or better cloth. Quality of product may be a powerful lever in holding our markets.

"I would not advocate a general scrapping of machinery.

"I would not advocate buying something new because it is new or because of unproved claims of wonders a new machine will work in our mills.

"But a disposition to be on the watch, a mind open to conviction of a real improvement, a willingness to scrap machines only partly worn out when a real advance appears—these are some of the essentials of a successful textile manufacturer of today and tomorrow, as they have been of all the outstanding successes of American industry in all lines of modern endeavor.

"Don't scrap indiscriminately.

"Don't buy everything that is new.

"But don't stand pat.

"Prove the new things that are good. Find out how much they will improve your product or reduce your costs. If they do either to a degree that will affect your success, act without delay.

"Eternal vigilance is the price of liberty. It is the Alpha and Omega of industrial progress."

H. H. Iler, chairman of the recently-formed master mechanic's division of the Association, reported on the organization meeting held in Charlotte on October 27th, and C. M. Black made a report for the Eastern North Carolina Division.

Robert W. Philip, associate editor of COTTON, C. Randolph Bennett, of the *American Wool Cotton Reporter*, and Henry G. Lord, president of *Textile World*, were called upon for brief talks.

J. A. Chapman, Jr., next made formal presentation of the S. B. Alexander medal for 1926 to F. Gordon Cobb. Following an offer of Mr. Alexander, who is southern manager of the Crompton & Knowles Loom Works, made at the Tybee Beach meeting in the summer, to present the medal each year to the man selected by the board of governors as having done more for the industry from a manufacturing standpoint, the award was made unanimously to Mr. Cobb.

Mr. Cobb at this point outlined the work of the Arkwrights, Inc.

It was announced that the place of the next meeting would be selected later, and following a few details the meeting was adjourned.

The Luncheon.

After the morning session, the delegates repaired to the main dining room of the hotel, where a real meal was served. Everything moved along in tip-top shape, in direct contradiction to the holocaust and travesty upon the name of the eating staged at Tybee last summer. An excellent meal was provided and served perfectly, and musical entertainment by the Greenville Sandpaper Quartette and Choruses from the Parker Mill School District, under the direction of Pete Hollis, were delightful.

The concluding feature of the luncheon was the awarding of a mahogany chest filled with Greenville-made products to J. R. Wikle of Shelby, whose name was drawn from the hat containing the names of the millmen present by Becky Ann Jones. W. E. Beattie, ex-president of the Victor-Monaghan Mills and present mayor of Greenville, spoke briefly during the luncheon.

Roving Frame Cones and Equations.

EDITOR COTTON:

I see in the May issue of COTTON where "H. H. Y. (China)" has answered my article, which was written almost two years ago.

He states in the second paragraph: "It is the hope of the writer that he will clear up some of the other points set forth in "Wash's' article, as well as some points in 'Wash's' 'Roving Frame Cones and Equations' which appeared in the October, 1924, issue of COTTON."

Well, I hope so. However, I should like to refresh "H. H. Y.'s" memory on the following points, which he should clear up:

(1) A fly frame run at a very slow speed calls for a slacker rack gear, which means a larger movement of the rack at every change of the carriage, and at the finish of the set the cone belt will be found at about three-fourths of the working area of the cones. Figure it out.

(2) What I wish to know is first, with Bodden or Dunn flyers, which is the bottom cone (a) or (b), (not forgetting that Dunn flyers call for a bottom cone having straight outlines); and second, what type of compound or differential? This is important, as one type has a high speed bottom cone and the speed of the bobbin and spindle vary. What I am after, is how to get the relationship between the cones and flyers by equations. It will prove very useful if "H. H. Y." will only tell us how.

(3) Why does the cone on the Howard and Bullough frame have different outlines from that of the Whitin or Saco-Lowell frames?

(4) The diameter of the strand does not remain the same. As a matter of fact, the strand as it is laid upon the bobbin is of a less diameter, or occupies less space at the beginning than it does at the finish of a bobbin. This increase is very gradual, but constant, and is caused by the pressure of the presser condensing the strand. The cones may be figured out theoretically correct, but with the foregoing in mind, also the different types of flyers and compounds, how is it figured by equations?

(5) "H. H. Y." stated in his letter of March, 1924, page 501: "As the two axes of the cones are parallel, and as the length of the belt is constant, it is obvious that at any point the sum of the two diameters plus the distance beween the axes must be equal to a constant in order that the belt will not run loose at one time and tight at another."

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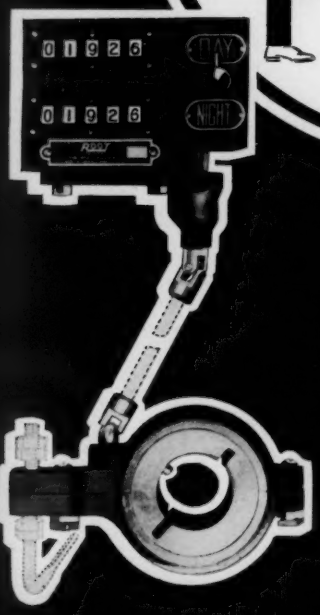

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So writes a manufacturer from New England, who recently installed Root Counters and is now paying by pick.

Send for the illustrated brochure – "The Advantage of Paying by the Pick." An interesting story of the Root Counter. How it creates a greater effort on the part of the worker, promotes harmony between day and night shifts, and furnishes each moment an exact record of goods produced.
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Another manufacturer says in part:
"They don't make the looms run any faster but they do have a wonderful effect on the weaver." And so they do—Root Counters do not directly increase production but they do increase the efficiency of the operator. With the preceding days record before him he has a definite objective and works towards bettering it.
Root Counters not only incite the worker towards greater effort during working hours, but eliminate that discord and petty bickering between employees and overseer that occurs when the time and quality of work turned out is questionable. Harmony between shifts using the same looms is enhanced. Each worker knows that he is paid by his reading and he will, without fail, see that the counter is recording to his credit. Thus the record of each worker is clear and no opportunity to argue is present.

Root Counters record definitely.
They cannot be forced either forward or backward.

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ROOT counters

-in the Textile Mill

The length of any cone belt on any up-to-date fly frame is not constant.

(6) Let us assume that owing to a radical change in the hank roving or lap we are forced to change the compound pinion from 20 to 18. This would reduce the speed of the bobbin and would also cause, necessarily, a smaller lateral movement of the rack at each completion of the carriage. What effect does the foregoing change have on the parabolic curves of the cones?

(7) Does a change in its own speed affect the outline of the bottom cone?

In the third paragraph (May, 1926) he states: "I was away off according to 'Wash's' estimation simply because I was talking about the relative speed, while he was thinking of the absolute speed. And then he went on to assume that I never saw a fly frame in operation on high and low speeds. I advise the readers to study the difference between the relative speed and the absolute speed of machine parts and they will easily see whether it was 'Wash' or whether I was 'away off'".

The foregoing is wrong because there is no such thing as absolute speed in the system of winding-on.

"H. H. Y." is a poor mind reader when he states that I was thinking of the absolute speed. What I think about is an excess speed made up of mixed factors and controlled only by watchfulness and diligent study. I would appreciate very much having him explain what he means by absolute speed?

In the sixth paragraph he states: "If he means what he says, I think he can find my equations in Mr. Parker's book, only in another form, if he will take the trouble to do so. If that is the case, what does he mean by saying that he found Mr. Parker's work correct in every way."

This is what I mean: Mr. Parker is theoretically correct, as "H. H. Y." is. Now why do we differ on the subject. "H. H. Y." has not brought to the surface a single practical point. All we get is equations. In my article entitled "Frame Speed and Cone Outline" in the 16th paragraph, I stated that cones could be figured theroetically correct. My object in the discussion is to prove that a great mistake is made in changing the speed of fly frames from that for which the cones were modified. Also, in changing from one type of flyer to another without changing the cones. 'H. H. Y." would have us figure the amount of pressure of the paddle on the bobbin according to Newton's law of gravity, which is impossible, for the reason that there are so many facts to make this law useless.

The first Newton law is, "Every body continues in its state of rest or of uniform motion in a straight line unless compelled by an external force to change that state."

Now what is an equation? An equation is an expression of equality between two quantities. But as I have before stated, how can we use equality to find the sum of inequality which exists on every fly frame. Can "H. H. Y." deny that the excess speed is unequal at every point between the intermediate speeds?

He terminates his article by saying: "I want to again announce that only strictly mathematical proof will be accepted by the writer. 'Wash's' two letters cannot be accepted because of their lack of consistency."

Then why did "H. H. Y."answer them? I confessed that I was unable to figure the intermediate speeds by equations. I said that cones were really a continuous string of pulleys. If I am wrong then let him give us the mathematical proof that he referred to.

WASH (R. I.)

Roving Frame Cone Curves

EDITOR COTTON:

In the May issue of COTTON, on page 703, there is a letter that certainly should not get by without correction.

Notice the last paragraph, on page 705, "Wash" says: "'K. F. F.' overlooked the pressure at the termination of the presser pad. The strand, on all fly frames, as it is laid upon the bobbin, is of less diameter, or occupies less space at the beginning than it does at the finish of a bobbin. This increase is very gradual but constant, and is caused by the pressure of the presser condensing the strand.

"This pressure is greatest when the bobbin is empty or small, and lightest at the finish or full bobbin. Cones are really so many separate pairs of pulleys, connected together in a continuous string. Therefore, each layer of roving added to the bobbin must be considered separately and the diameters of the cones figured for that layer alone."

As no mention was made of the flyer lead, we naturally assume that the bobbin lead fly frame is referred to. I say "naturally assume" because the flyer lead frame is now obsolete, and if this type of frame is being discussed at any time, the fact is generally mentioned.

"Wash" tells us the roving or "strand" occupies less space on the empty bobbin. This, he says, is caused by the pressure of the presser pad. Also the pressure is greatest when the bobbin is small, and decreases as the diameter of the bobbin increases.

How is it possible to get a variable pressure on the presser pad, when the *speed of the presser is constant?* The flyer travels at a constant speed, does it not? Only the bobbin varies its speed. *Remember, it's a bobbin lead frame.*

"Wash" has had a lot to say, in the past, about Newton's Law, and the laws of gravitation, etc., having an influence upon the pressure of the presser pad. That is deep stuff for the average mill man to play with. Too deep for me, I freely admit. I wondered at the time if "Wash" really knew this fellow Newton as well as he claimed. I am satisfied now that they are complete strangers.

Most of us are familiar with the following rule, however. A constant weight, traveling at a constant velocity exerts a constant pressure.

To make this rule perfectly plain—If we hit a nail with a hammer with exactly the same force every time, the nail will sink just the same amount at each blow. That is the simplest way I can put it.

As the weight of the presser is the same throughout the set, and the spindle speed is constant, then how can the pressure of the presser vary, as "Wash" says?

Now, as the pressure of the presser compresses, or condenses, the roving, and this pressure remains constant, how can any one layer, from start to finish of the set, occupy more or less space than another?

In the same paragraph "Wash" mentions the cones as being so many pairs of pulleys connected in a continuous string, and each layer of roving must be considered separately. The foregoing sentence contains two facts, and facts are conceded to be correct. "Wash" knows also that the surface of the cones is curved, and not a straight taper. "Parabolic" I think they call them. He also knows that

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The TOLHURST, with its larger capacity basket combined with rapid acceleration and braking, makes volume production sure.

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Lower power and operating cost, larger production, freedom from shutdowns and repairs, longer life—these four factors distinguish Tolhurst performance and produce the economical service Tolhurst users enjoy.

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one cone is concave and the other convex. But he doesn't say *why* the cones are curved. He doesn't say *why* the separate layers of roving necessitate separate calculations to get the correct diameters of the cones for that particular layer. He doesn't tell *why* the curves on the cones constantly vary.

I am going to try to explain some of these things. If I slip up, please be patient with me, as I am trying to accomplish this by reasoning and not by quoting. However, if any errors are noted, I should like to be corrected, for my own information and benefit.

To begin with, let us assume for the sake of simplicity, that the empty bobbin is 1-inch in diameter and that the roving being made is ¼-inch in diameter. Therefore, for the first layer of roving, it will be necessary to have a bottom cone of the correct diameter at the small end to properly wind the roving on the empty bobbin. The roving being ¼-inch in diameter, will increase the diameter of the bobbin ½-inch at each layer. This will make it necessary to change the diameter of the bottom cone (we will just speak of the bottom cone) sufficient to slow the bobbin down for the second layer. The bobbin must be slowed down on each layer sufficiently to compensate for each increase in bobbin diameter. This is necessary to keep an even tension, as the ends come from the rolls.

Here is the catch. While the bobbin increases in diameter ½-inch for every separate layer wound on, the *percentage of increase* gradually grows smaller as the bobbin builds up. It is this variable percentage that necessitates curved cones. The fact that the percentage of increase of the bobbin diameter varies, can easily be proved with very simple arithmetic.

For instance: 1-inch is the diameter of the empty bobbin and ½-inch increase is caused by each layer. Therefore, ½-inch divided by 1-inch equals 50 per cent increase in diameter. Now, 1½-inch is the diameter of the bobbin on the first layer and a ½-inch increase is caused by the second layer, therefore, ½-inch divided by 1½-inch equals 33 per cent increase in diameter.

I hope the foregoing simple calculation brings out my point clearly. This should show why the cones are curved, instead of being constructed with a straight line taper.

It might interest some of the readers to know that cones having a straight taper were used a good many years ago. To compensate for the varying increase in percentage of bobbin diameter, a rack was used having unevenly spaced teeth. This contrivance was hardly successful, therefore the cones having a curved surface were adopted.

The cones are constructed concave and convex because the sum of the opposite diameters of the two cones must be kept uniform, all along their entire length. This is so the cone belt will maintain an even tension at all times. They must also be so shaped because the bobbins must decrease in speed at a constantly varying amount. Only concave and convex cones can accomplish these results simultaneously.

By proving that the percentage of increase in the diameter of the bobbins is unequal, I have shown why it is necessary to figure the cone diameters for each layer separately.

The cones have gradually decreasing and increasing curves, because of the fact that the percentage of increase in bobbin diameter is uneven. This can also be easily proven, mathematically, by assuming a diameter for the first layer and figuring each succeeding diameter from the increase in each layer. Of course, the front roll delivery must also be taken into consideration. It is a tedious process of repetition, and I don't think it necessary to go into that. By connecting these diameters with a curved line, the variable cone outline will be quite apparent.

"Wash" likes to question the other fellow a lot. Well, here is one for him. It isn't intended to be terribly hard, so he should answer it easily enough.

Why couldn't we have a speeder constructed with the variable speed coming on the spindle instead of the bobbin?

CONTRIBUTOR No. 231.

A New Slant on Long Draft Spinning.

EDITOR COTTON:

In connection with the present interest in long-draft spinning, I wish to mention a commendation of this method that throws light on a new angle of its possibilities.

The superintendent of spinning in a mill running some long-draft, said that during the recent spell of hot weather, when a number of mills closed down because the work ran so poorly, his own work was giving him a lot of trouble on all but the long-draft frames, which ran as well as if the weather were perfect.

All of his frames on 12.00 to 14.00 hank roving were in constant trouble, while the long-draft frames, spinning the same numbers from around 2.40 to 2.60 hank, gave no trouble at all. Naturally, the heavy roving would not break back so easily as the fine.

This feature of the long-draft system will certainly appeal to mills running fine numbers in sections of the country where climatic conditions are adverse to cotton manufacture. A well-humidified mill is supposed to take care of exceptional dryness, but at times during the so-called "dog-days" there will be a succession of moist, hot days, when the air is so full of moisture that everything is damp. When such days come, it is very hard to make a fine mill run at all. But this spinner says his long-draft runs as well then as any time. CONTRIBUTOR No. 1321.

A Comment on Slashing.

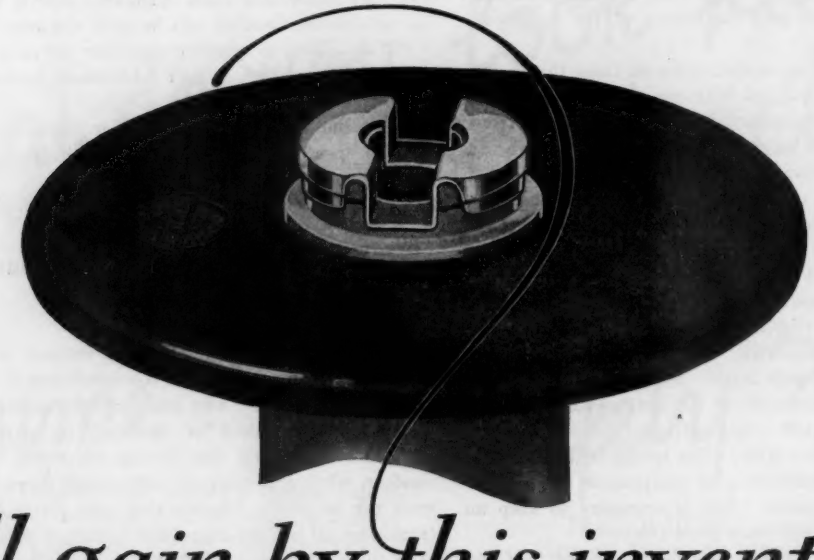
EDITOR COTTON:

We have had a number of interesting and instructive articles recently treating of the chemical and physical reactions taking place in the size kettle. Very few, however, have contributed much toward dealing with size in its relationship to different types of practical work. That is, along the lines which are of especial interest to the slasher men.

With the continued trend toward fine and fancy cloths in the South, the size question becomes one of paramount importance. The old coarse numbers in warp yarns have already been replaced largely by finer yarns, and along with the change must go the old ideas of *weight* being the greater idea in size applications.

Heavy sizing undoubtedly has an effect on the strentgh and elasticity (or more correctly speaking, pliability) of yarns. It is excellent to bear in mind that up to about 36s the weight of size does have a marked effect in this direction. However, no one can draw a line on any number and give the weight of size necessary, because the "feel"

Which tire fabric mills



will gain by this invention?

FIRST, let us refer to the handicap under which tire fabric mills know they are operating. The necessity of using a Twister Spool with a thick base has heretofore prevented the use of a *vulcanized* fibre; the result has been splinters, breaks and also injuries to employes' hands.

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for the finished piece may have to vary widely, as from crepes to ducks, etc. The percentage of size put on in excess will make yarn weave badly, as we all know. For this reason I will try to give a few practical ideas along this line.

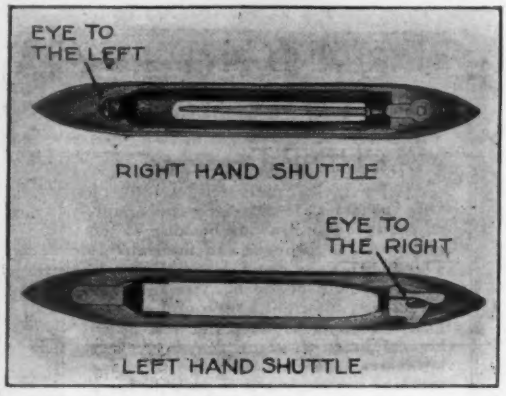
Yarns up to 32s can be sized up to about 80 per cent without making an appreciable difference in weaving, providing the size has been made with the simple object of increasing the weight and obtaining good weaving results. After 80 per cent there begins to be an appreciable difference. This difference is accentuated with every increase in weight. When 150 per cent has been reached the yarn will break far oftener than where there is 80 per cent, no matter how the size is made or treated.

At the same time it must be pointed out that anyone trying to put 80 per cent of size on the yarn would require to have a mixing where the various ingredients are nicely balanced to get good results. Otherwise the weaving would suffer. If the size contained too much starchy matter, or was short of softeners, the yarn would be harsh and brittle. If the proportion of chloride of magnesium was deficient, or in excess, the yarn would be too dry or too damp. Again, a well balanced mixing might easily be spoiled by not being sufficiently well boiled. If the yarn is overdried after the size has been applied bad results will follow in the process of weaving. M. R. H. (N. C.)

Knowing the Hand of Shuttles.

EDITOR COTTON:

Knowing instantly the hand of a shuttle is always an advantage to the man who operates several makes of looms. It sometimes happens that right-hand looms use left-hand shuttles, and vice versa. Therefore, the hand of the loom does not always indicate the hand of the shuttle used. English looms are of the opposite hand from ours. That is,



a right-hand loom there, is our left-hand loom here. Also, an English loom operates the crank shaft in the opposite direction from ours.

In ordering shuttles it frequently occurs among mill men that the question comes up as to which hand the shuttle in question is, but very few appear cocksure about this. So the matter is dropped and the shuttle has to be mailed again in order to have more made "exactly like sample sent."

To tell the hand of any shuttle is comparatively easy if

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a mill man will learn just two points about a shuttle as follows:

Rule—Hold the shuttle before you with the open side of the shuttle up, and with the shuttle eye toward you just the same as it would run in the loom. Now if the shuttle eye is toward the left, it is a right-hand shuttle. But if the eye of the shuttle is at the right hand it is a left-hand shuttle. That is to say, in other words, holding the shuttle before you with the open side up and the eye before you the filling will pull off towards the opposite hand from what the shuttle is. The illustrations show what is meant.

H. D. M. (MASS.)

Why the Filling Sloughs Off.

EDITOR COTTON:

Replying to "A. E. (Ga.)" I may say that the sloughing off of the filling while weaving will always be a source of trouble, but it can be fought and kept down to a minimum. We can lay some of the trouble to the loom inasmuch as a high speed loom causes the yarn to loosen itself by the quick impacts it receives at the termination of every other pick. It receives this impact every pick, but the damage is done on the pick where the heel or bottom of the bobbin leaves the shed first. The weaver will say: "Make the bobbin so that this will not occur."

The best solution which I can offer to "A. E." is to make the bobbins smaller in diameter, and the nose of the bobbin, that is from the shoulder to the top of the bobbin, as long as he can up to two inches. This gives a little more friction to the yarn and will assist in checking the sloughing off. He will have a smaller package of yarn on his bobbin but the results in the finished cloth will offset any inconvenience he may be put to in his doffing.

CHRISTY (MASS.)

EDITOR COTTON:

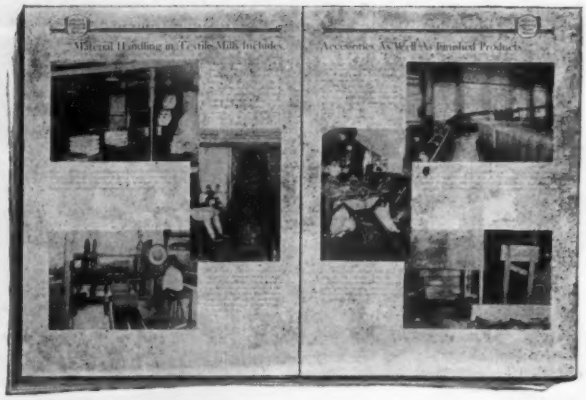
In reply to "A. E. (Ga.)" regarding his ropy and sloughy filling, will say, that in the first place he does not appear to have enough twist in his filling, and his stroke I should think would be based on a two-inch stroke. The speed of the traverse will cause this trouble. The running down of the traverse fast, and up slow, has been found the safest way to run it.

Cams and pitman stands being worn are dangerous, and this should be looked after very carefully to see that there is no delay in the changing. Any delay on the change will cause the filling to crowd itself.

Spindles which are not kept oiled properly will cause filling that will rope off. The same applies to bands that are slack or bands that are too large for a whirl.

Sloughing can in a measure be made on the looms, and most any loom fixer can show this to you if he will. One thing is too much power, causing the shuttles to bounce, and numerous other little things in the lining of the shuttles in the boxes. Only the other day the writer noticed one loom that was causing hanging threads on the selvages, and at times roping back in the cloth. In this instance there was a loose rivet on the picker that caused the shuttle to bounce at the picker end, shaking off extra filling and then jerking it back as it made its next stroke.

Getting back to the spinning, I would not attempt to humor this by putting on a heavy traveler. "A. E." should put on the nearest correct weight traveler possible and



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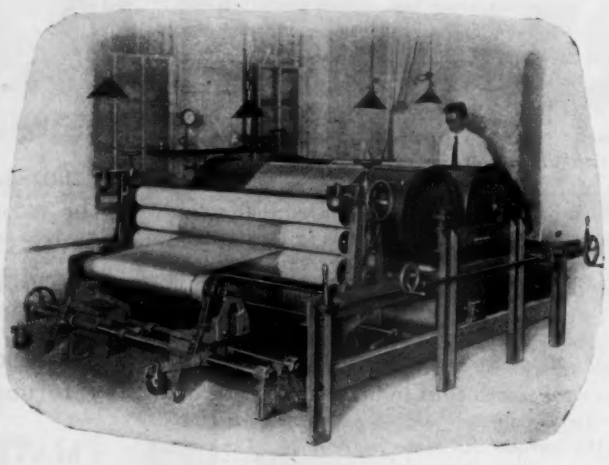

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bring the other ailments out and work on them.

T. A. D. (Ga.)

EDITOR COTTON:

In answer to the request of "A. E. (Ga.)" for information relative to filling sloughing off in the cloth, will say that there are a good many things which will cause this and I will enumerate some of them which I happen to know of.

First, too much power on the loom, which causes the bouncing of the shuttle in the box, will sometimes cause the filling to slough off in the cloth.

Again, having the yarn too loosely wound on the bobbin will cause sloughing, but "A. E." states that he is using as heavy a traveler as possible.

Following, I will give some of the remedies that I know of for sloughing: If there is much constant sloughing off it will be well to look at the traverse of the rail on the spinning frame. The rail should go up slow and down fast and this will wind the yarn so that there will be a minimum drag of the yarn that is unwinding from the bobbin. This will lessen the tendency of the coils to pull over each other and drag other coils with it, causing a slough.

Another thing to do is to either steam the filling in a Sargent conditioning machine or sprinkle it with a sprinkling can. However, in using a sprinkling can the water used for this purpose should be treated with a germicide to prevent mildew later in the cloth. This can be done by adding a quart of liquid formalin (35 per cent saturated solution) to a barrel of water. This should be used only for sprinkling the filling before use. Usually, it will be found that there is more sloughing off on Monday mornings when starting up than at any other time. To prevent this, the filling hauler should sprinkle the filling that is in the filling boxes before starting up on Monday morning.

W. J. R. (N. C.)

EDITOR COTTON:

In reply to the question submitted by "A. E. (Ga.)" concerning what to do to prevent ropy or sloughy filling, I will say that it depends on what causes it, as to the methods used to prevent it. This writer states that he is running Nos. 2¾ to 14s, with standard twist and speed. Now this thing we call book standards is becoming more and more disregarded. Experience has taught me to use it only as a medium to determine a standard for my room.

About the first thing we want to do is to look at the build of the bobbin. If the bobbin is not properly built there is an overlapping or piling up of one thread on top of another. For instance, the ring rail as it moves in its upward motion, the traveler serving as a guide for placing each wind or warp at its proper place on the bobbin. To do this we must have the ring rail properly speeded. Your correspondent's ring rail is improperly speeded, and the result is, the thread fills up its space with ring rail moving up and starts winding toward the bottom of the bobbin and it meets the traveler down here. The traveler says, "I am your guide. Follow me," and so Mr. Thread must turn and go back again. Dont' you see, the threads are crowded into too small a space and consequently there is an unbalanced wind. When the thread is started to unwinding it zig zags up and down and this causes loose threads or loose wraps and it sloughs off. There must be a change

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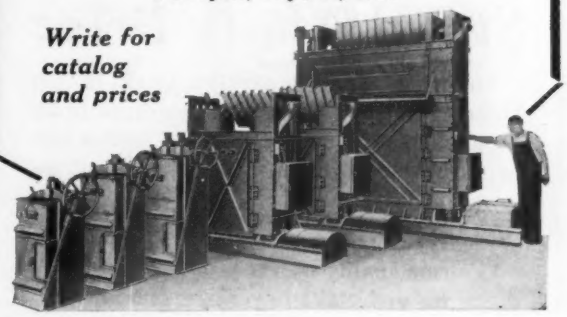
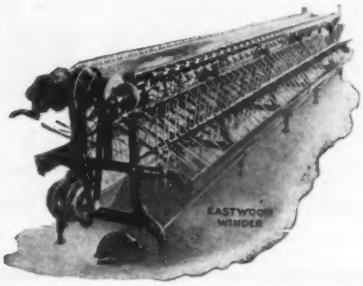


For Rayon and Cotton



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ALL sizings bind the fibres, but if you wish to obtain in your Warp Ends, the **two most** essential characteristics, *Elasticity and Flexibility, you must use*

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to avoid this overlapping or piling up of wraps. Build a bobbin properly and it will properly unwind. Each wrap should be placed one above the other, or vice versa.

Not knowing this man's layout on his train of gearing, I would suggest that he change one frame of travelers first, putting on a traveler light enough to run without pulling the ends down on a full doff. Next, change the stroke and make it from 2 inches to 2¾ inches. Next, change the speed of the cam shaft, running it faster until each wrap has formed one thread above the other, and vice versa. Then change all frames in proportion to this one, travelers, stroke and speed of cam.

Then have a filling chute made with apartments for the different counts. Slope the back of the chute about 50 per cent and front of chute about 16 per cent. Make back and ends solid. Make front open by means of half round slats, the round part outside to prevent the tangling of the filling, the slots to be about one half inch apart, and with the front toward weave room. Place a humidifier head directly in front of the chute, and the open front permits the moisture to penetrate the filling in the chute and the filling can thus be properly conditioned by this method before it goes to the looms.

By following these suggestions "A. E. (Ga.)" should be able to eliminate his trouble. Will also say that he could prevent this trouble to a certain extent on the looms, but I do not think it wise to wait until you have crashed into a train and then, just as you hit, apply the brakes, because you are likely to knock the train off the track. The brakes should be applied in time to stop the car before it reaches the train, and so we want to stop all sloughing before it hits the looms.

I trust this will be of some service to "A. E." in eliminating his trouble. R. R. (N. C.)

Southern Pine in Construction.

That the timbers supporting Brooklyn bridge are of southern pine, as detailed in the recent advertising of the Southern Pine Association, is not at all astounding to those who know the strength and durability of the wood.

There are two major families of southern pine, one long leaf, the other short leaf. It is of long leaf that the Brooklyn bridge timbers are cut, as long leaf has been proved by many governmental tests to be the strongest and most durable soft wood ever produced in America.

Short leaf, the younger brother, is a much softer wood, and is used for construction mainly where easy working qualities are desired though much of it grows to great strength. It is essentially a younger brother because it attains a merchantable size in a much shorter period than does long leaf.

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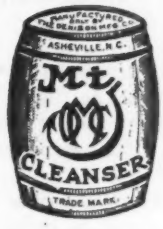

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Southern Pine Association mills have also within the past two years, been pioneers in grade-marking lumber. This consists of the mark of the grader, signifying the exact grade of the stick of lumber, being stamped at the mill on the end of the piece, giving retailer and ultimate buyer an assurance that they are receiving exactly the class of lumber they bought. This association was the first of the lumber associations to give the public this certificate with its product, though several other associations have since followed the lead. Today 80 percent of the production of the association mills is being grade-marked and trade-marked.

A Cause for Uneven Work on Pickers.

EDITOR COTTON:

In the July issue, in his article "Overcoming a Picker Difficulty," "Contributor No. 1666" says, "Will say that I have been in a picker room for fifteen years and had all kinds of trouble, though I have never had a cone worm to cause uneven work."

He claims the feed rollers cause the bad work. If he answers this letter, I wish he would tell us how the feed rolls cause bad work, when the cones and cone belt are working perfectly. That is, of course, if the feed rolls are free from laps and properly weighted.

Now, how does he know that the worm on the finisher pickers has caused no trouble? I think that no man knows the friction that exists at this point when dry from the want of oil. However, I wish to say that I have had forty years experience with pickers, and experienced the trouble for the first time a few months ago. But, as stated in my article on page 461 of the March issue, to which he refers, I was sent for, and for a time, I must confess, I had a problem on my hands. After the trouble was righted, I thought perhaps a slightly dry worm would cause light places in the lap, so I immediately sent out an S. O. S. call to the boys of this department, whom I always have at heart, by writing the letter which appeared in March COTTON.

WASH (R. I.)

Longer Bobbins on the Spindles.

EDITOR COTTON:

I notice from the September issue of COTTON that "Christy (Mass.)" would like to have the opinion of some of the readers in reference to the change he is going to make on the filling bobbins from 6½ to 8 inches long, so I take this opportunity of expressing my views on the change.

My suggestion to "Christy" is that he install longer spindles, as I am sure it will be cheaper in the long run, and I agree with him in his contention that the spindles will be unbalanced and the result will be shaky spindles, for they are made and balanced to carry a certain load, like everything else, and have a limit, which if exceeded is a detriment to the efficiency of the spindle.

Besides the foregoing trouble which may arise, I think the grip of the bobbin on the spindle will be decreased, especially as the bobbin gets full, for the extra weight will cause the bobbins to jump and wobble if the grip is not good, which will unbalance the spindles.

I trust that this will be of some help to "Christy" and that he will arrive at the correct solution of his problem.

JOCK (MASS.)

Better Wages and Lower Costs.

Experiences of a number of manufacturers with the plan of paying bonuses based on group efficiency to groups of employees, are summarized with the details of the plan in a booklet entitled "The Better Wage, an Analysis of Group Bonus Labor Payment" just issued by Ernst & Ernst, accountants.

An increasing number of employers representative of various industries are said to be adopting this plan using as models the methods already tested by other employers.

When a manufacturer, the booklet emphasizes, pays workmen for the results of their individual efforts instead of for the results of cooperation or group, he must provide at extra expense a substitute for cooperation in the form of close supervision and complicated accounting.

"Under the group labor payment plan", the text reads, "pay for individual work is made subject to the results of team work. The workers are assembled into groups and each worker is guaranteed the payment of an hourly base rate for his time, regardless of his production. If the efficiency of a group as a whole for a pay period is 75 per cent of a standard, each of its members receive 1 per cent of his base rate earnings as an additional wage or bonus. The bonus per cent increases", in accordance with a fixed scale, "for each increase of 1 per cent in group efficiency.

"If a man spoils material, his lost time is a money loss sustained by the group. If one or more men do good work on material, before some one member of the group spoils it, the lost time is that much multiplied. It is to every man's advantage not to pass along to his fellow workers his own defective work and to be on the lookout for defects in work passed on to him."

The inclination of workmen "to be suspicious and resist changes," is usually one of the principal obstacles to be overcome when a manufacturer adopts the group bonus plan and that the customary procedure is to apply the plan "at first to one group of carefully selected workmen" so that the rest of the plant can see by actual demonstration that "the opportunity offered to earn higher wages is more than mere talk." It is said also that the limited application serves to prove to the manufacturer that the plan is really a practical means to reducing costs and securing better control.

It is pointed out that "group bonus labor payment facilitates budgeting and the determination of standard costs; simplifies the determination of and minimizes the variance in actual costs."

"Group bonus labor payment is a dominant feature", the booklet says, "in the development of means through which the natural and unchanging laws of good management are made to control present day conditions," an implication being that the plan is one of the means of reducing costs that may be adopted by many American manufacturers during the next few years under the pressure of the keener competition now developing.

Ernst & Ernst offer "The Better Wage" free on request of any of their offices.

Knitting Section

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Characteristics of Folded Knitting Yarns

BY WILLIAM DAVIS, M.A.

In general the yarns employed for knitting have to comply with certain definite conditions before they can be used by the maker of knitted goods. Yarns which are suitably employed in making woven fabrics cannot, as a rule, be used for knitted fabrics owing to the entirely different conditions. In weaving, hard twisted yarns are used in the warp and if this requires to be softened so as to improve the handle, it is done by introducing softer spun yarns in the filling. In the plain stitch this is not possible in the knitted texture as the cross thread has to fill both the functions of warp and of weft and it must steer a middle course as regards tensile strength, softness and elasticity. The yarns must be soft and bulky in character in comparison to the weight, a certain airiness or porosity is desirable to fill out the interspaces between the loops. The spinner of hosiery yarns is therefore located between two courses: He must impart to the yarn evenness of diameter and sufficient strength for the thread to withstand successfully the rather strenuous looping operation, where the thread must have appreciable elasticity or stretch. On the other hand he has to attain this result without too much twist or the handle of the fabric will be too hard and proper effects cannot be obtained in the finishing routine. In many cases, for instance, the manufacturer could quite easily secure a double folded yarn sufficiently strong to satisfy all requirements of knitting but the thread, being too hard twisted, possesses too little internal elasticity or slipping among its fibers.

Owing to those causes there is considerable use of plaiting in knitting fabrics, that is, two thinner threads are run together into the needles of the machine, as in this way we obtain a softer handle from the single softer twisted yarns, while their occurrence as two together gives the necessary strength in knitting. If one of the threads does fracture or partially does so then its neighbor is at hand to support it and prevent the break from developing into an opening in the fabric. Naturally, the success of this double knitting process depends largely in having the two threads fed into the needles at exactly the same tension, for if one gets tighter than the other then it has to bear the strain unaided and much of the benefit of double working is lost. In general it is a relatively expensive method of attaining the essential knitting properties in a yarn as the finer counts of yarn have to be spun from finer grades of cotton, or of wool, and they are correspondingly increased in price.

There is, however, another reason for employing the folded method of working such yarns side by side and that is a desire on the part of the manufacturer to obtain something original and distinct in his products from those of his competitors and many firms make a specialty of standard yarns by using them together in the same or in different counts as they thereby attain peculiar effects in the fabric which commend themselves to their clientele. They obtain exactly the same yarns as their competitors from the spinners who supply all with the same sorts, but by experimenting on the lines mentioned, they attain a reputation for special qualities in their goods.

It is well known that certain manufacturers acquire renown for making perfect plaited goods, having one yarn on the face and another on the back, while a manufacturer almost next door may be unable to find a market for his plaited goods owing to their blemishes. German manufacturers have attained skill in making plaited goods and an investigation recently conducted into their methods showed that their factories were organized with an almost double compliment of equipment. In place of a worker having four fast running machines, he controlled double that number of machines where the speed was considerably reduced. It means that the firm have to expend almost double the amount to equip these particular departments but it has also meant that by running their machines at reduced speed they have solved all their difficulties as regards perfect plaiting and have established a dominating position in the market for such goods.

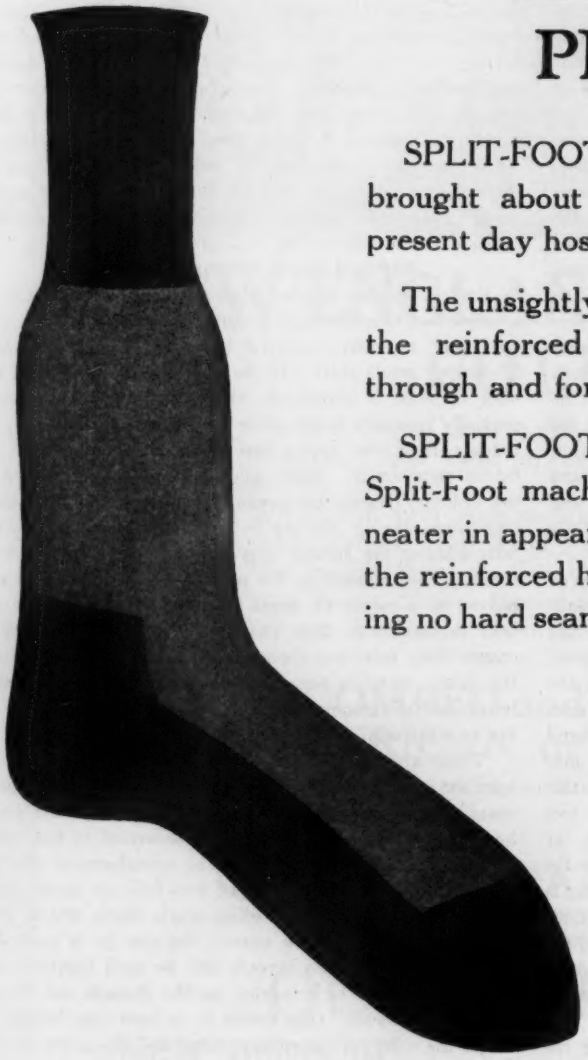
Reduced Speed Improves Plaiting.

Perfect plaiting implies a number of other advantages as regards price, for it is possible to employ a very thin veneer of expensive material to cover up a background of cheaper grade stuff. If the plaiting is perfect then the back material is effectively obscured, if it turns around partially it results in the color and material showing up in patches from the back, thus depreciating this kind of fabric enormously. Much may be done by additions to the ordinary frames to ensure tighter tension of the knitting yarns during plaiting but unfortunately this also entails making the fabrics very rigid. Some textures have recently been placed on the market where plaiting is employed as a means of floral figuring, but the threads are held so tightly as they pass into the frame needles, to ensure their retaining their correct relative positions, that the fabric when it comes off the machine is like a stiff board and will require much alteration before it is fit for use as a material in ordinary clothing.

There are many cases when two yarns are employed together in a fabric of the same counts and color, in other cases they are used together to match some counts which have run out and when urgency is essential to the execution of the order. In this case the manufacturer who has been running a given count of two-fold, or single yarn, selects from his stock two other single yarns which, when used together, will come nearest the one he is replacing. In such cases the two threads can be used together or a slight twist may be imparted as the threads are coming from the bobbins. One device is to have one bobbin set under the other on the spindle stand and the upper spindle is provided with an opening so that the thread from the lower one comes up through. As the thread withdraws itself from the upper bobbin the natural coils of winding cause the lower thread to be surrounded by the one higher up and a twist or fold is effected which is sufficient for the purpose. For solid color this has the effect of strengthening the thread, as twist imparts added tensile strength, thus proving an advantage over the threads used separately. In the case of two-color effects, this slight torsion results in giving an attractive melange or random style which is in keen demand for certain grades of footwear and knitted web.

The "BANNER"

SPLIT-FOOT PRODUCT



SPLIT-FOOT HOSIERY, the new creation, brought about by the main disadvantage in present day hosiery, namely:

The unsightly inside fringe of splicing ends in the reinforced portion which tends to slip through and form whiskers on the outside.

SPLIT-FOOT hosiery made on "BANNER" Split-Foot machines is smoother on the inside, neater in appearance and has added strength at the reinforced high splice and double sole, having no hard seams.

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It is felt that the hosiery manufacturer should have more exact knowledge of the various effects of those plaiting and melange operations and a number of experiments have been made with an assortment of standard knitting yarns of various classes to demonstrate the effects on the tensile strength and stretch of various degrees of twist varying from a very slack torsion of one turn per inch up to the point where the threads are so tightly folded that their fibers suffer internal fracture. The tensile breaking load of the single threads is also given so that one can tell precisely what the gain is from the use of those yarns, separately and even slightly folded as is done in melanging two colors on the knitting frames.

A 16s single cotton counts of yarn of a type largely employed in hosiery and knitted goods was first tested. The Baer single thread testing machine was taken for this purpose, a type which is in very extensive use in the knitting industry on account of its accuracy of working and the details which it can provide regarding the properties of knitting yarns. The machine is set to test any length from 3 inches up to 18 inches, and, naturally, when a manufacturer is setting up to establish standards of strength and elasticity for his yarns it is important that he should select some definite length at which all his tests should be made for the results of strain and particularly of stretch vary with the length tested; in general the numerical result increases with the test length, in the case of stretch directly according to the length tested. Opinion varies as to which length is the most suitable, probably the most usual practice centers around about 12 inches as a suitable length where steady results are secured and not too expert handling is required.

The length selected for the present range is 18 inches; the strains have been recorded in ounces avoirdupois and the stretch or elongation in inches and fractions of an inch. This yarn in the single shows an average breaking strain of 12.24 ounces while the elongation on an 18-inch length is 1.125 inches. The lowest strain recorded is 11.1 ounces while the highest is 13.2 ounces, giving the mean of 12.24, as mentioned. In the elongation the highest given is 1.25 inches and the lowest 1.065 inches. Two threads of this 16s yarn were subjected to increasing degrees of torsion on a standard doubling machine of the Schweiter pattern which is largely employed in the knitting industry by manufacturers who seek to obtain their own effects in doubling and folding. At each twist number the thread was tested for strength and elongation in 18-inch lengths, ten tests being taken as representative of the bulk and the averages given. The following gives a table of the results in the 16s single yarn:

Single 16s cotton counts, average breaking strain 12.24 ounces and average elongation 1.125 inch.

Turns per Inch	Average Breaking Strain	Average Elongation
1	21.85 ozs.	1.2 inch
2	31.15 ozs.	1.5 inch
3	25.6 ozs.	1.4 inch
4	27.2 ozs.	1.1 inch
6	33.6 ozs.	1.3 inch
8	35.2 ozs.	1.4 inch
10	36.8 ozs.	1.5 inch
12	36.8 ozs.	1.7 inch
15	35.2 ozs.	1.6 inch
18	36.8 ozs.	2.1 inch

These results are drawn out in graph form in Fig. 1 which shows the curve for the breaking strains and Fig. 2 which gives the line for the elongations. The contour of Fig. 1 shows that there is for the first few turns per inch in this yarn a certain tendency towards fluctuations, no doubt due to the way in which the strain happens to be borne by one or the other of the two threads. At 2 turns per inch the average is given as 31.15 ounces, while at 3 turns it is 25.6 ounces; an appreciable reduction. As soon as the torsion begins to grip both threads and weld them into a composite unit, there is a steadier result and a very noticeable increase in strength as the number

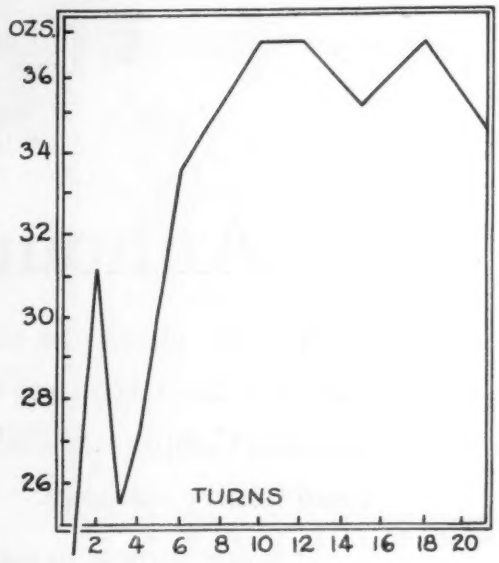

FIG. 1

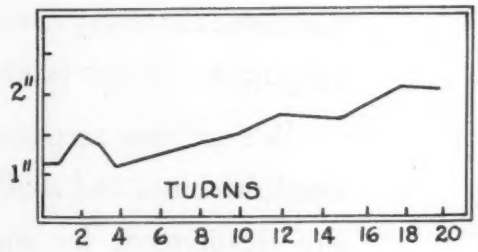

FIG. 2

of turns per inch is increased. The highest strain, 36.8 ounces, is recorded for 10 turns, but from this point to that of 18 turns per inch there is a phase when adding twist does not measurably augment the tensile strength, this phase being characterized by extreme fluctuations. When 20 and over are reached there is a definite tendency to break among the fibers as indicating that the peak has been attained. Taking the elongation there is a slight fluctuation round about 1 and 4 turns per inch after which we have a steady increase of this property with increasing strain until the highest point is 2.1 inches over an 18-inch test length. This is as things go a comparatively small range of variation as constructed with worsted yarn for example, but the form of the breaking strain graph is very instructive as revealing to the manufacturer those torsions which produce the greatest augmentation of the tensile strain. For the maker of knitted goods the lower torsions are of the most importance because in the harder

Announcement

We are pleased to announce that the Wildman Mfg. Co. has taken over the interests of the Richter Machine Company, of Philadelphia, makers of full fashioned hosiery machines.

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twists we should not obtain a yarn having the necessary covering properties and when the stationary strength phase is reached he will generally take the lower number of turns per inch which will give him adequate strength. Taking the average breaking strain of the 16s single as 12.25 ounces, twisting produces a pronounced accession of strength, except at 21.85 which is a little under twice the above number, that is $2 \times 12.24 = 24.48$ ounces. This is doubtless due to the hazards of tension in such a slack twist, the strain often falling singly on one or the other of the two threads. Between 4 and 10 turns per inch there is a very rapid increase in breaking strain, almost three times the figure of the single thread.

A finer cotton counts, 30s, was taken and put through the same tests and the following gives the table of results:

Turns per Inch	Average Breaking Strain	Average Elongation
1	11.9 oz.	1.125 inch
2	10.9 oz.	1.125 inch
3	10.26 oz.	1.1 inch
4	12.3 oz.	.875 inch
6	13.8 oz.	.75 inch
8	14.8 oz.	1.125 inch
10	16 oz.	1.25 inch
12	15.8 oz.	1.1 inch
15	11.4 oz.	.7 inch
18	12.7 oz.	.85 inch

These results have again been drawn out in graph form in Figs. 3 and 4 where the ounces are placed up the side

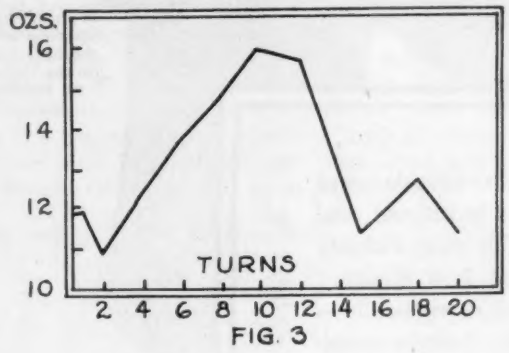

FIG. 3

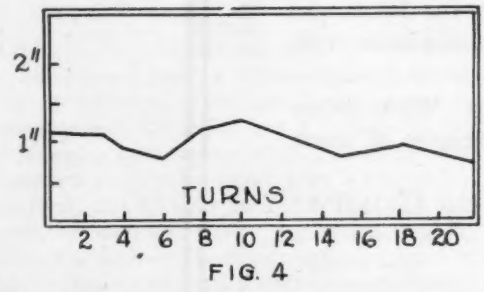

FIG. 4

of Fig. 3 and the number of turns along the bottom of the diagram. Again the same general behavior is noticeable as in the last example, there is a tendency to fluctuate during the first few turns per inch, after which a definite accession of breaking strain is recorded until about 10 turns are reached after which there is a marked decline. The lowest average is 10.9 ounces and the highest is 15.8 ounces; an indication of the potent effect of torsion on the strength of the knitting yarn.

The elongation is remarkably stable and varies little over the inch while with increasing twist there is a tendency for the elongation to diminish somewhat, but this is a very stable result as things go, particularly when compared with the next example of worsted yarns. In the 30s counts the average of 10 tests made on the single thread before twisting gave the highest point as 7.5 ounces with 5 ounces as the lowest. Few of the folded yarns fall below twice this figure except in the lower torsions, before the two threads have come to grips, so to speak.

In the next series of tests made on the same method a great change is noticeable and the graphs afford a pic-

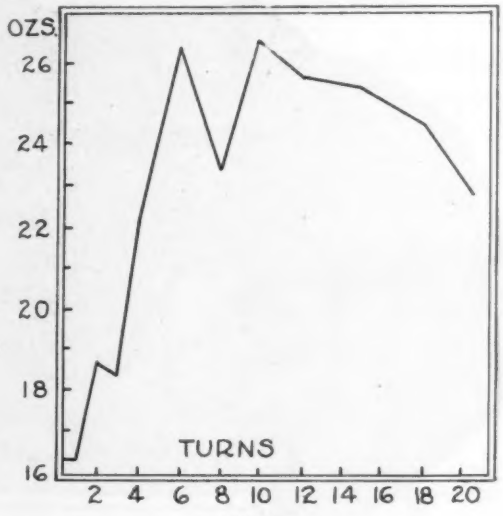

FIG. 5

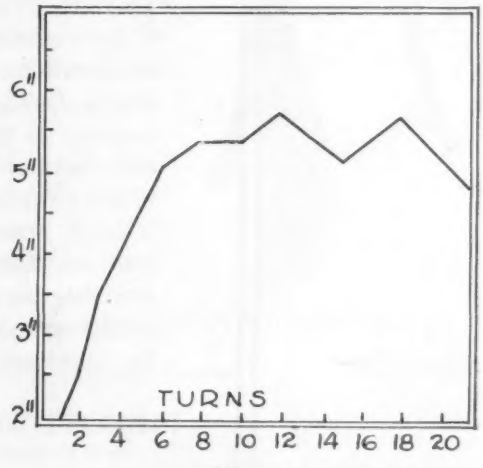

FIG. 6

ture of the great differences in characteristics between the cotton and the worsted spun yarn. This sample is 18s worsted counts, that is a size of which 18×560 yards will weigh one pound. The same series of tests for increasing torsion gave the following table of averages:

Turns per Inch	Average Breaking Strain	Average Elongation
1	16.29 oz.	2 inches
2	18.7 oz.	2.5 inches
3	18.3 oz.	3.5 inches
4	22.1 oz.	4 inches
6	26.4 oz.	5.1 inches

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8	23.4 oz.	5.4 inches
10	26.6 oz.	5.4 inches
12	25.9 oz.	5.7 inches
15	25.6 oz.	5.3 inches
18	24.6 oz.	5.7 inches

These results are again portrayed in Fig. 5 for the breaking strains and in Fig. 6 for the elongations of the thread under increasing degrees of torsion. Again there is a rapid accession of strength from the lowest point of 16.29 ounces up to the highest of 26.6 ounces. During the first few turns per inch there is a pronounced tendency to fluctuate but after that we have a steady increase in the breaking strain under augmented twist. After a period of more or less stationary tensile strain under increasing twist, there is a marked tendency for the thread to weaken as the twist becomes excessive as indicating that the fibers are being torn inside the double thread. These stages are also marked by a pronounced tendency for the thread to roll up or kink upon itself when it is left devoid of tension.

The elongation increases and keeps pace with the record for breaking strains and there is a rapid augmentation, in regular conformity with the strain line. This elongation, however, is an unnatural one as indicating the spirited objection of the curley fibers of wool to being folded together under severe torsion. In this case the single 18s worsted knitting yarn gave the lowest breaking strain as 5.2 ounces and the lowest elongation as 1 inch while the highest breaking strain is 6.2 ounces and the elongation 1¾ inches. In this case there is no point in the folded thread which is less than twice the single strain, in fact the lowest point, 16.29, lies very considerably above it.

The concluding series of tests made on exactly the same lines are worked on the 150 denier rayon or artificial silk yarn which is almost equivalent to 35s cotton counts, the following being the table for increasing torsions:

Turns per Inch	Average Breaking Strain	Average Elongation
1	13.5 oz.	3.25 inches
2	14.2 oz.	3.5 inches
3	12.9 oz.	3.75 inches
4	14.1 oz.	3.42 inches
6	14.75 oz.	3.48 inches
8	14.1 oz.	3.75 inches
10	14.25 oz.	3.62 inches
12	14 oz.	3.2 inches
15	13.65 oz.	3.6 inches
18	12.8 oz.	3.5 inches

The single thread gave its highest breaking load as 6.5 ounces and its lowest as 5.8 ounces, while the elongation varied between 2.9 inches and 4 inches. In this material increasing twist has less effect than in any other for the breaking strain at its highest point is 14.75 ounces and at its lowest 12.8 ounces, a very slight fluctuation compared with the cotton and woolen yarns. In the higher twists there is a tendency for the strength to decrease as the torsion becomes severe but there is remarkable stability of characteristics. The elongation remains practically the same for the single thread and for the double yarn under all stages of torsion, the fluctuation being almost negligible. Its extensibility is almost three times that of the cotton yarns similarly treated, while it approaches that shown by the worsted thread but much more steady. The relative differences in the tensile and elongation properties shown in these figures also gives the foundation of many of the difficulties which the manufacturer meets in working those materials side by side in the same fabrics, or

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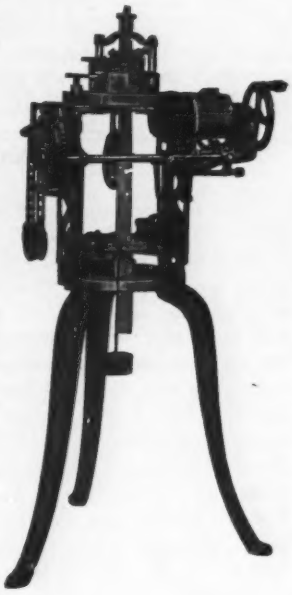

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FIG. 7

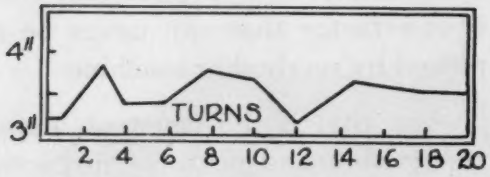

FIG. 8

folding the materials together. Their natures are as poles apart and they react quite differently to the strains and stresses imposed on the yarns during the knitting operation. In Figs. 7 and 8 are graphic presentations of these figures for rayon.

Among the Knitting Mills.

With the purchase of the plant of the Walker Manufacturing Co., which adjoins the full-fashioned hosiery mill of the William Brown Co., Philadelphia, Pa., the latter has placed a contract for 40 Theodore Lieberknecht high speed 42-gauge machines, which will be in place by the middle of 1927 and which will be the nucleus of a plant to comprise 200 machines and be operated as a separate unit. The new installation will be of 24 section leggers and 28 section footers. The William Brown Co. are manufacturers of Granite brand hosiery, which is sold direct to the retail trade. The present plant consists of 120 machines, and is being operated overtime, as has been the case for months. The management says the mill is sold up to the end of the year, and that it will be necessary to decline some business offered for deliveries to December 15th.

Having sold their factory building to the William Brown Co., the Walker Manufacturing Co., Philadelphia, manufacturers of loom reeds and heddle frames, will remove shortly to Atlantic and Ruth Streets, where they will occupy the entire first floor of the building housing the Cambridge Worsted Co. The company will have more space than in the quarters being vacated, and it is stated that need for more room was the reason for selling the building which will soon be equipped with full-fashioned hosiery machinery.

The Philadelphia Knitting Mills, Philadelphia, Pa., manufacturers of full-fashioned silk hose, will install additional Karl Lieberknecht 42-gauge machines in January, which will provide for a 50 per cent increase in output. The company sells to retailers.

Green Bay Knitting Co., Green Bay, Wis., has consolidated with the Jersild Knitting Co., Neenah, Wis. Otis Brown will be the superintendent of the plant, with David White as designer. The Jersild Knitting Co., by this move, adds a line of women's knitted wear to its products.

McEwen Knitting Co., Burlington, N. C., have purchased 12 new 42-gauge 20 section machines for the manufacture of full-fashioned hosiery, it is announced, the new equipment being an addition to the seamless hosiery machinery already operating.

A partnership under the name of Hollar Hosiery Mills have taken over the reorganized Best Hosiery Mills, Inc., Hickory, N. C., which will be operated under the same management and policy.

Among the additions planned in an expansion program of the Southland Knitting Mills, Macon, Ga., are a new one-story knitting addition, and a dyeing and bleaching plant. Considerable re-organization of machinery, in the present mill, will be made as a result of the space provided by the additional buildings.

Dunbar Knitting Mills, Dunbar, W. Va., have been incorporated with a capital of $250,000 for the manufacture of sweaters and other knit goods, for which a plant will be erected. Among the incorporators are Paul Rose of Passaic, N. J., Boyd H. Siber, Thomas G. Fletcher, L. A. Frasier and D. M. Faulkner of Charleston.

Carolina Silk Products Co., Greensboro, N. C., have been organized to erect a building for the manufacture of silk hose. W. F. Lotz of Philadelphia, and C. L. Weill and C. A. Hines of Greensboro are among the owners. The capital is $100,000. The building will be a one-story structure, 600x270 feet.

An extension, 30x75 feet, being added to the plant of the Graham Hosiery Mills, Burlington, N. C.

McDonald-Heathcote Co., Inc., Thomasville, N. C., has been formed for the manufacture of hosiery, and machinery is being installed. The plant will make men's half-hose, and a capacity of 3,000 pairs a day is anticipated. Ray McDonald and Edward Heathcote head the company.

Janet Hosiery Mills, Shelby, N. C., is constructing an addition, 50x70 feet, in which manufacturing equipment will be installed.

It is reported that the Villa Rica Electric Light & Power Co., Villa Rica, Ga., has sold its electric light equipment and machinery franchise to the Georgia Railway and Power Company, and has voted to change its name to the Villa Rica Manufacturing Co., and install 50 hosiery machines with complementary equipment.

The 1926 edition of the "American Directory of the Knitting Trade in the United States and Canada" has been issued. This is the 44th year of publication of this directory, and the present edition represents as usual a complete revision of all of the data, bringing the information up-to-date. The main section is the compilation of knitgoods manufacturers, alphabetically according to states and towns, and also according to products. An additional section gives manufacturers of woven cotton underwear and another group shows the manufacturers of rayon underwear. Lists of yarn manufacturers, dyers, bleachers, finishers and printers of knitgoods, buyers, jobbers, exporters, etc., are also given. The price of the book is $2.00 per copy postpaid, and the publishers are Bragdon, Lord & Nagle Co., 334 Fourth Ave., New York City.

"He who whispers down a well
About the thing he has to sell
Will not make the shining dollars
Like he who climbs a tree and hollers."

—*Selected.*

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Drops the First Stitch on the Transfer.

EDITOR COTTON:

At the present time my interest is centered on the Scott & Williams H H machines, 240 needle, and I would like to see discussed in "Knitting Kinks" the question of this machine dropping the first stitch on the transfer. I shall appreciate any suggestions from your readers as to how this can be eliminated.

I would also be glad to receive any suggestions pertaining to the general adjustment of this type of machine.

H. B. (TENN.)

Avoiding Loose Filaments on Japan Tram.

EDITOR COTTON:

On page 88 of the November issue of COTTON, a contributor brings up the problem of loose filaments in six thread Crack Double Extra Japan tram silk. He states that he buys this in skeins and degums and dyes in open tubs, and that the trouble is in loose filaments causing the thread to hang on the bobbins. He asks for suggestions as to treating the silk in the skeins to prevent this trouble.

In reply I would call attention to the fact that broken fibers which stick on the bobbin, causing a drag in knitting, may originate either before, during or after dyeing, and any treatment of the skeins will not necessarily correct or prevent the trouble.

In the first place, Crack Double Extra silk is not always free from split threads. I have seen many samples of the best silk on the market with large numbers of the defects which are classified as split threads and which are sometimes actual broken filaments, but are more often large loops which break during subsequent manipulation. Examination of the thrown silk skeins may yield some information, and the man having this trouble might find it advisable to try buying a tested raw silk and having it thrown on a commission basis.

No boiled off skein will be absolutely free from broken fibers. If the number is excessively large, the quality of the raw silk is the first point of investigation, since degumming, dyeing and winding only serve to make the condition worse. It is assumed that the tubs and sticks used in boiling off are free from rough places, that the silk is not being over-boiled, and the kind and quantity of soap is correct.

Without seeing the skein of dyed thread, the writer can only suggest the possibility that the skein and cone winding may be more directly responsible than the hairy condition in the skeins. Cut or rough porcelain thread guides or slub catchers on the winding machines are frequently a source of troublesome hairiness, since they not only make existing split threads worse, but also break many more fibers.

Another factor which appears more important than a treatment of the skeins is the matter of conditioning during cone winding. Running the silk through a proper conditioning solution lays the broken fibers in such a way that little trouble should be experienced from drag due to this cause.

CONTRIBUTOR No. 1025.

EDITOR COTTON:

Replying to the question regarding the trouble experienced by "Contributor No. 367" on Japan tram due to loose filaments, which caused the thread to hang on the bobbins, it is a strange coincidence, but last week I investigated a similar case very thoroughly, and it was found that these loose ends or broken filaments were due to the fact that soap, or too much soap, was used in soaking or de-gumming. In soaking, the silk will naturally stretch, and soap will cause it to dry hard, in other words, lose its elasticity, and when the final drying on the bobbins occurs the silk contracts, and being deficient in elasticity the pull is sure to break some of the filaments, causing the loose ends.

The use of gum tragacanth is not to be recommended, as it simply lays down the loose ends without remedying the basic trouble. The proper thing to do is to use an emulsified oil in throwing, without the use of soap, and a de-gumming oil without soap in boiling. A few years ago these loose ends were taken as a matter of course, but the development of throwing oils and de-gumming oils without soap have so improved the various processes as to practically force the up-to-date silk worker to use them.

CONTRIBUTOR No. 37.

EDITOR COTTON:

In reply to "Contributor No. 367" in regard to the trouble he is having with loose filaments and the silk hanging on the bobbins, first, I will call attention to several things which may be outstanding causes of loose and broken filaments:

(1) Great care should be exercised in the selection of

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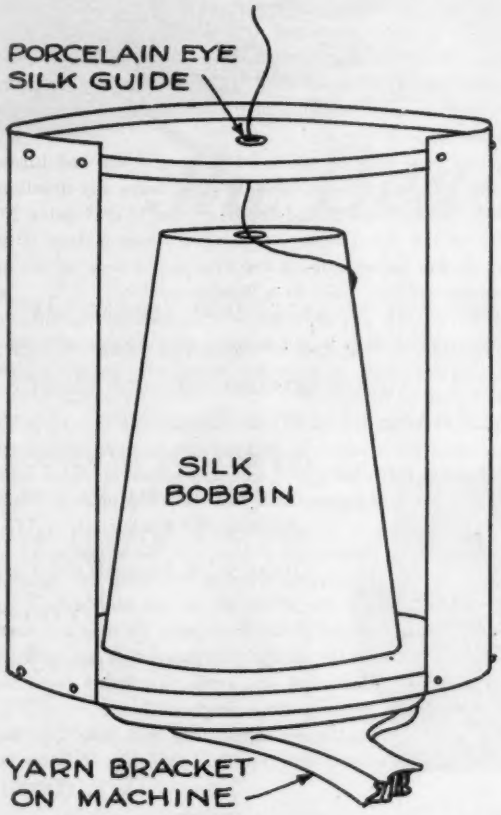
dye sticks and their handling. They are likely to be rough, and this has a tendency to catch and pull the filaments loose while in the dyeing process.

(2) The winder spindle and roller may have rust spots, which is caused by the steam in a heated room condensing over night and on damp days.

(3) In the handling of tram and all other silk skeins, the bobbin necks should be perfectly smooth. The best results are obtained by getting brass tubing slightly smaller than the neck of the bobbin and pressing it over the neck of the wooden bobbin. The brass can be polished to a glossy finish and will always be perfectly smooth. The silk will never cause trouble on a bobbin treated in this manner.

The foregoing suggestions may be of some help to this contributor in eliminating his difficulties, and now I will state further:

(4) Six end tram silk, as well as all other counts, should be rinsed after de-gumming in a solution of gelatin



and glycerine. The gelatin will act as a glue, making the silk filaments firmer, and the use of the glycerine with the gelatin will keep the silk soft and pliable.

In reference to the use of gum tragacanth, in which the contributor states he had rinsed the tram silk and which he claims gave him more trouble than if he had not used it, I will say, gum tragacanth should never be used in that manner. Instead of making the silk filaments stronger, it makes them harder and more brittle. Naturally the silk would have a tendency to be wiry like artificial silk and cause trouble on the knitting machine.

To get a good idea of the effect gum tragacanth has on the tram silk, take a piece of ordinary rope, put one end in the water and let it freeze. It will be found that the strands are hard, brittle and chunky, which is the same effect that the use of gum tragacanth has on the silk. I, for one, would not use it at all for this reason.

The solution of gelatin and glycerine should be the same in amount as the gum tragacanth which the contributor used, excepting the glycerine needs only to be about ¼th the amount of gelatine used.

(5) Most mills use a ballooner on bobbins, which is a good idea, but I have gone one better. First of all I get two pieces of wood about six inches in diameter, then a sheet of celluloid and some round headed brass tacks and make a cage like sketch herewith.

I tack the celluloid sheet on the circular blocks, having an opening large enough to slip the bobbin through. This cage is secured to the yarn bracket on the machine, which also centers a suitable block or holder for the yarn cone or bobbin. Then the bobbin is slipped through the opening onto this bottom block or holder. It is a good idea to put some cotton under the bottom end of the bobbin to keep the silk from slipping under the bottom and catching. The top circular block is fitted with a centrally located porcelain eye about an inch above the top of the bobbin. I find this cage device helps when the room windows are raised, as it prevents the wind from blowing the silk around.

E. B. (WIS.)

Is Artificial Wool Next?

EDITOR COTTON:

A move which may mean considerable to men in the cotton industry is causing much comment in the knit goods markets in and around New York concerning the reported possibility of the production of an artificial woolen yarn. While many factors are skeptical as to the development of such a yarn, there are those who have pointed out the attitude of silk men when artificial silk was first talked of, which today is a serious competitor to silk and other yarns in all branches of the knit and fabric trades. It was said that woolen yarns could be produced with as much success as the rayons, and these new yarns are likely to be used extensively in the manufacture of knitted garments and underwear as well as for other textiles.

The high prices for woolen yarns have been given as the reason for special attention given to the development of another artificial yarn, just the same as the high cost of silk led to the production of rayons, which are now being adopted universally for many purposes, with prospects of greater improvements to come. While it was said artificial wool has not been produced in this country up to the present time, it is believed that experiments are being carried on with this idea in view, and that it will eventually be made commercially. Much depends upon the success of a plant which has been started, or is about to be started, by a large dyeing concern in France, known as the Etablissments Kuhlmann, as a part of the Raubaix textile group at Lille. Should this venture prove to be a commercial success there are some groups in this country ready to take up the work and establish one or more plants here in the near future.

Should artificial wool be made by the dyeing concerns one or more establishments are likely to be started in or near New York, where a large part of the dyeing of tex-

tiles and yarns are handled in this country, with the exception of where the mills have their own dyeing and finishing establishments. This refers principally to cotton and some knitting mills in the distant territories where the shipping costs are too great to be handled by the large concerns in the East.

Paterson, N. J., interests would like to have more knitting mills locate there and are equipped to handle large projects with many buildings already erected which have been used by silk manufacturing concerns. The fact that it is near to New York would do much to attract this type of business and they are anticipating the new woolen yarns with considerable interest.

While the artificial yarns would appear to be only a competitor to the woolen industry, it has been pointed out that prices would be lower than wool and likely to interfere somewhat with the cotton trades, although many factors in the market believe that the fact that cotton is so generally needed by all persons that it is not likely to be more than a stimulant to the trade as a whole. It would also call for the introduction of new types of garments which could be produced in cotton as well as a woolen substitute and likely prove a "boomerang," as one jobber said when discussing the situation. He believes that with new ideas developed new fields are opened to all other lines and adds to the possibilities of the trade.

To make clear his statement this jobber pointed out that previous to the introduction of silk and rayon knitted underwear, only the heavy wool and regular old fashioned type of cotton was used, but as soon as the silk and rayon union suits, bloomers, etc., were brought out, numerous cotton men introduced new lines of cotton underwear of the same type for which there is an increasing demand in all sections of the country.

It would seem to be the part of wisdom for cotton underwear manufacturers to work up more new ideas in styles and thus strengthen their own position in the markets before this or some other development reaches consumation. E. S. (N. Y.)

Drop Stitches on the Looper Line.

EDITOR COTTON:

This is the first time I have attempted to answer any of the knitting problems which you publish. I have been reading "Knitting Kinks" ever since you started the department several years ago, and of course, have noticed the various questions in this section and the answers which have appeared. I assumed that these answers were prepared in your office or by special correspondents of yours, and as they usually seem to be pretty practical information, and being a mill man, and not a writer, I have not taken the time to send in my opinions on them, although every now and then I have read something I didn't agree with, or have had similar experiences that might throw additional light on some of the problems brought up.

However, one of your editorial staff while visiting our plant recently, explained to me that as a matter of fact you really are glad to get voluntary replies to the questions you publish. He told me that practically every one of the letters in "Knitting Kinks" comes from some practical mill man, and said that you do whatever is necessary to the letters for publishing when they reach your office. Although, he assured me, your main purpose in operating the department is to provide a place where practical knitting mill men could swap ideas on their mutual problems, and that as a matter of fact he said you want the letters to be in ordinary "mill language" so that a man doesn't have to be a *writer* but should just "talk shop" as if he were discussing the matter in conversation with one of his men or some other mill man.

As to the answers you publish, he pointed out that these represent only the opinions and experiences of the individuals who write them, and while they are practical dope, at the same time, every man has his own way of doing things, and oftentimes it might not be the causes suggested in the first answers that would be causing the particular man's trouble, but that it might be something else, which another man knows. In other words, he said, your idea is to get as many different opinions and experiences on any given subject as you could for the benefit of the man asking the question and the other readers who are interested in the question. (This man has clearly defined the purpose of "Knitting Kinks." Because of his misunderstanding as to the letters, we interrupt here to emphasize to the readers with whom we do not have personal contact, that his understanding now is correct, and we welcome voluntary contributions from readers at all times on any subjects. No writer's names are published, but should accompany the contribution.—Editor.)

After your representative left, I caught on, and turned through some past issues to see if there were any questions I could answer, and found the one from "Contributor No. 5432," in the April issue, as to what causes a drop stitch right on the looper line on the first round leaving the toe on mercerized half hose on a Banner machine.

I don't know anything out of the ordinary on this, but can tell what I have found, among other things, will cause this, and according to your representative, that's what you want all of us to do.

One common cause of this trouble is loose needles. Then when the machine is knitting the toe, the needles will fall down and tip the guard cam and knock the latch up as it passes the mouthpiece, and then when the machine leaves the toe, the latch is up and sheds the stitch.

The regular looper course cam can be set to make too large a looper course, and the cam will drop too suddenly and that will throw the stitch off of the needle.

If the finger running the main body yarn is not raised up enough to clear the needles, although it is not in action at this point, the needles will strike the finger right over the mouthpiece, causing these drop stitches.

I hope these scattered suggestions will help this man, and if he gets around this trouble, would like to know how he did it. S. P. (TENN.)

A Handy Cabinet for Weight Tests.

EDITOR COTTON:

In all first-class hosiery mills it is important to get frequent checks on the amount of yarns used in the various styles. Heretofore, the process of obtaining yarn weights was always more or less of a difficult operation due to the fact that there was no regular place to do work of this nature. That is to say there was no storage place for scales and yarn and the note books used in getting yarn weights.

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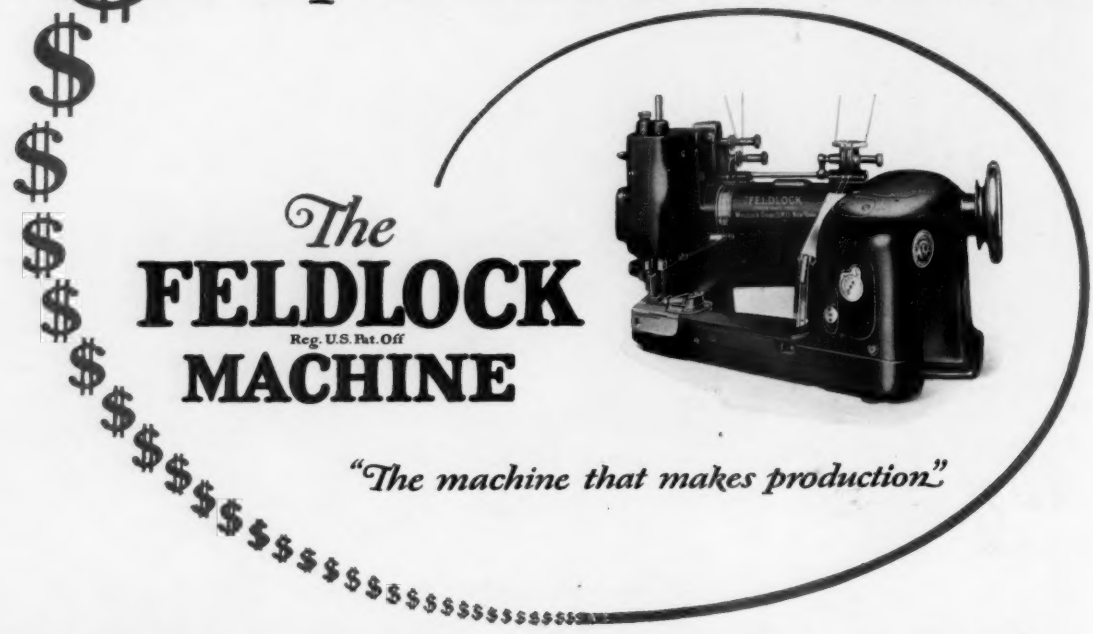

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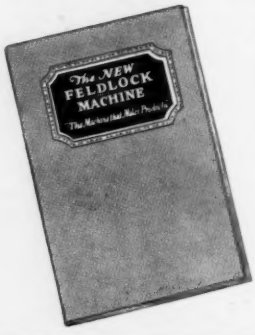

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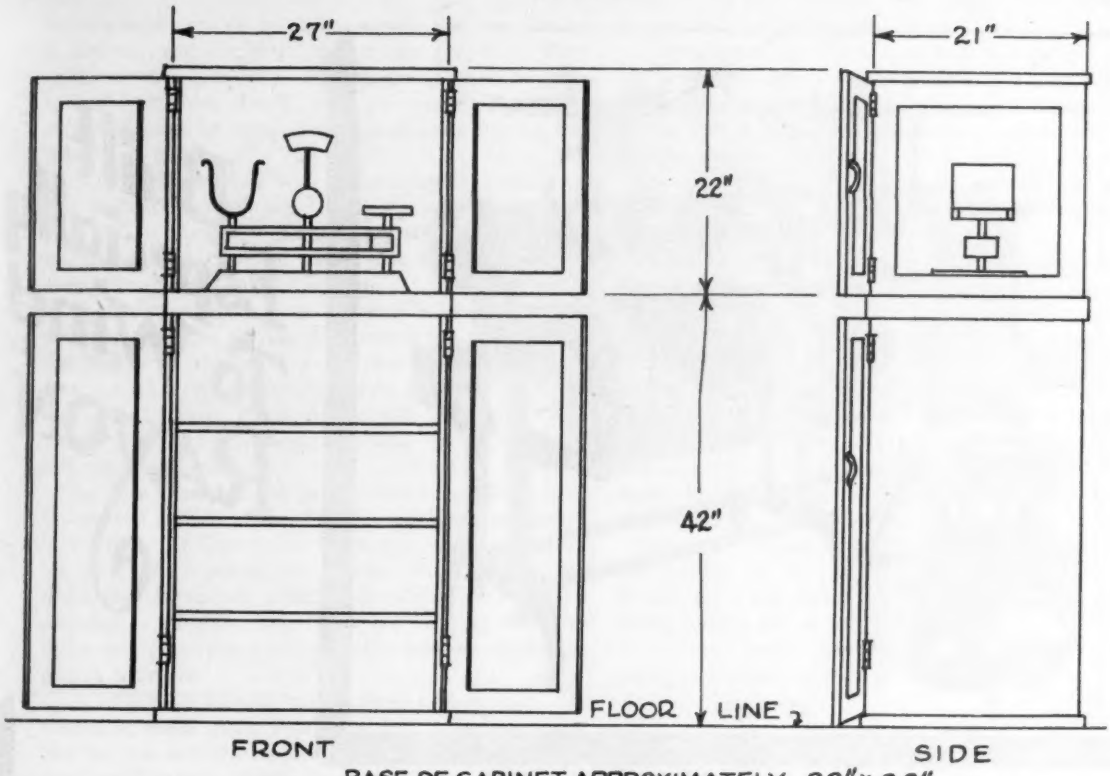


balance scale, and owing to the fact that this type of scale is very sensitive and susceptible to drafts, they have constructed a cabinet for making yarn weights. This cabinet consists of two sections, the upper section is fitted up with glass sides and plain doors. The lower section is fitted with shelves for odd yarns. A front and side elevation of this cabinet is shown for those who may be interested in constructing one for their own use.

Since having the cabinet built it was found that yarn weights could be made in half the time formerly needed, as there is provision in the cabinet to keep all data, tags, etc., needed in getting and checking accurate yarn weights.

As this idea is a useful one and not expensive to adopt I thought that readers of COTTON would be interested in learning about it. CONTRIBUTOR. No. 390.

Overcoming Fuzzy Rayon.

EDITOR COTTON:

Back in the April issue you published, from me, a question asking what would probably be the cause of fuzzy rayon on a Banner machine making a half-hose with 120 denier Viscose rayon plaited over 70s/2 mercerized yarn.

Then in the June issue, you published four very interesting replies to this question, which I considered to be most practical, and which were helpful to us in working ourselves out of this trouble.

We have about eliminated this problem, and I thought those who answered the question, and others who are readers, might be interested in knowing how we overcame it.

We found, on the machines that were giving the most trouble, that the guides were set too far forward, and what we did was to move the guides back and let the thread ride farther back in the hooks of the needles. This was the thing we did which helped us most out of the trouble.

CONTRIBUTOR No. 4589.

Handling the Yarn.

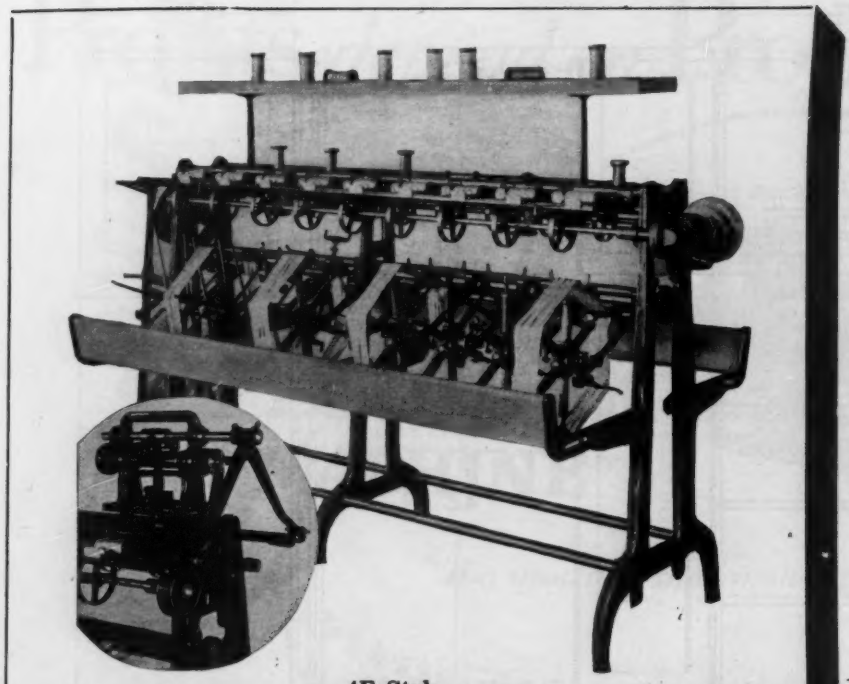
EDITOR COTTON:

There is one feature in the handling of yarns in a hosiery mill that is much abused and I would like to discuss it for the benefit of those who are having trouble.

As you know, when a cone of yarn is put on a knitting machine, if it has been smashed in on the side, or the threads are cut and snagged, it does not run very well. Many an operator and machinist has lost his or her temper because of this. The idle machine time resulting and the imperfections make it worth the while correcting this fault.

The present methods yarn manufacturers use in shipping the yarns is very good, as a rule, and the yarns are received in good condition, but where they are abused and smashed in on the sides is right in the hosiery mill in which they are to be used.

Of course there would possibly be one person who would be responsible for this condition, and that is the yarn man who distributes the yarns to the various departments. As the yarns are received in the stockroom, the boxes are opened, when needed, and right here is where the abuse begins. Often the yarn is *thrown* from the shipping crates, not laid, but *thrown* into a truck. Now it is this throwing of the cones that smashes them in on the sides and causes snags and pulls. These places may be only slight, but the



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delicate machinery on which the yarn is run does not see it that way, and simply will not perform properly. These trucks are then wheeled to the department where the yarn is needed, and here, usually, there are boxes or tills for the different makes of yarn. The yarn is *again thrown*, into these boxes or tills.

Now that makes two times the yarn has been picked up and thrown. Why all this handling and throwing of the yarn? Is it necessary? I would say not. Anyone in the knitting end of the work knows that the very least the yarn is handled the better it will run.

In the departments where the yarn is used, and where boxes are used for holding this yarn, it is a good idea to put these boxes on wheels. As the yarn is used up, the yarn man can wheel up a full box of yarn and take the empty one back with him. This does away with handling the yarn twice. The yarn man should of course be told to handle the yarn more carefully.

Another time when the yarn is handled carelessly is at invoice and inventory time. At this time there are several men from other departments put to the work of weighing the yarn. As a general rule, the yarn is taken from the boxes and thrown into a box on the scales. This practice probably is all right, but if you ever saw the way they throw that yarn, you would probably think somebody was getting murdered.

A little more thought, a little more care, given to this subject is worth while, I am sure, and it is little things like this that help the man at the machines in the knitting room and also help to keep the production and quality in line where the big boss can afford to wear a smile and express his satisfaction at the results obtained.

CONTRIBUTOR No. 1004.

Kinks on Chiffon Hosiery

EDITOR COTTON:

We have been running the new 300-needle Scott & Williams machine for ladies' chiffon hosiery for some time, and do like it and the product it turns out very much. In fact, I think we perhaps got the first shipment of this type of machine to come into the South when it was first brought out, so that our experience on it, while not very extended as yet, covers about as much time as does that of anyone else.

I now note that some months ago a correspondent of "Knitting Kinks" asked a question with reference to the operation of this machine. He wanted to know wherein its operation would be different from the more familiar types. He brought out that he uses the 240-needle machine, and that it would seem to him that on a 300-needle machine the transfer jack needles would be in such close contact with one another that they would give considerable trouble on the welt, and asked for any pointers from mill men gained from experience on this machine.

I am glad to tell you something of our experience. I think it is a good thing to have a place like "Knitting Kinks" where we can swap experiences of this kind.

In response to the question, will say that we do not have so very much trouble with the point raised. In this machine, the transfer jacks should come over the sinkers, and of course, as is the case with all other machines, the needles must be kept in perfect and straight alignment. The proper setting is just as close down to the sinkers as possible without rubbing the sinkers.

This machine has the reduced heel, and the switch cam has to be adjusted just as it goes on the heel so that it takes up the medium butt needles with the long butt, and on the toe, so that it leaves the medium butt needles down with the short butts.

On this machine, on a 3½-inch cylinder, we use 70 gauge needles. The production runs around two dozen to the machine a day.

I would not advise running anything heavier than 5, 6, or 7 strand pure silk on this machine, and so far as the cotton mercerized yarn is concerned an 80s/2 seems heavy enough, although it would be possible to utilize a 70s/2.

Of course there is going to be some trouble with long loops where the mock seamer is used, but a good rule I have found in this case is to run the butt of a needle between the transfer jacks and the sinkers, and not allow the dial to come down any lower than that. If there should be any trouble with loops just after the welt, the dial should be raised just a little bit more.

All in all, we are very well pleased with the machine, and think it and its product are entirely practicable. Should any other readers be operating this type of machine, I would like to know their experiences, and if anyone has any further questions on it, I would be glad to answer any that may come in to "Knitting Kinks."

O. S. (TENN.)

The Value of Enthusiasm.

EDITOR COTTON:

Have you ever noticed with what enthusiasm a group of machine adjusters will enter into a discussion of such subjects as football, baseball, boxing or radio? Have you ever noticed how eagerly they read every bit of information published on these subjects? Have you noticed how they will come to certain conclusions in regard to the future performance of different teams?

All this goes to prove that they are very active mentally, and this, together with the fact that they have been chosen from a large group of applicants for apprenticeship on knitting machine adjusting proves that they are above the average in mental ability.

A newspaper man once asked a very successful business man what he considered the cause of most failures in life. The business man answered instantly, "Lack of interest."

If a group of machine adjusters will show the same interest in their especial line of work that they do in many things outside of it, they would become a wonderful group of workmen.

Interest will go where it is sent. They should be sure that their interest goes to the right place, and remember that there can be just as much of a thrill in overcoming some machine trouble that has them "buffaloed" as in winning a baseball game if their interest in the former is strong enough.

CONTRIBUTOR No. 389.

Developments in Full Fashioned Mills.

Announcement a few weeks ago that William F. Taubel, Inc., had placed a contract for 27 Karl Lieberknecht machines, having at last determined to enter the full fashioned hosiery field, gave a further impetus to the movement

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among manufacturers of the circular knit toward the flat knitted. Clarence H. Taubel, president of the company, broke a long silence to give confirmation to a rumor which had persisted for some time and was not doubted even while persons close to him in the Taubel organization were denying it. "We felt we had to come to it," said Mr. Taubel, when he finally consented to authorize the statement the company would equip one of its mills in Camden with full fashioned machinery.

From the standpoint of potential production the Taubel organization probably ranks first among the "Big Three" manufacturers of women's circular knit hosiery. The first of these to install a full fashioned outfit was the Durham Hosiery Mills, Inc. Some years after the Durham, the pioneer in full fashioned production in the South, had proved the wisdom of its venture, the Ipswich Mills, one of the oldest hosiery manufacturers in the United States, succumbed to the lure of the full fashioned, leaving the Taubel company the last of the "Big Three" to no longer carry all of its eggs in the "seamless" basket.

"Our decision to knit women's full fashioned hosiery does not mean we feel there will be no field for the seamless," said Mr. Taubel, who pointed out there must continue a very great demand for circular machines for knitting men's, juvenile and infants' hosiery. While he declined to comment on the question, often raised, whether there would be any material displacement of circular knit half hose by full fashioned, it appeared he held the view that the "seamless" always will be given precedence for men's wear.

"The field of great development," Mr. Taubel said he believed, "will be in full fashioned rayon and part rayon hose for women. I look for a very great increase in the use of rayon for full fashioned hose," he said. Support for this proposal is found among circular knit interests who point to the extent to which rayon plaited on silk has superseded the all-thread-silk boot stocking of circular construction and the success which is said to have attended the knitting of rayon and silk in twist on flat machines. Mr. Taubel believes a very satisfactory full fashioned stocking of all rayon will be knitted in the course of a very few years—satisfactory as to service and fitting nicely into the price groove. His enthusiasm suggested the inference the Taubel company may be one of the first of the large organizations to essay that type of construction in a big way. "The field presents opportunity for important development," he said.

Although it is believed in many quarters that expansion in the full fashioned hosiery industry is being carried forward at a rate that raises the presumption of an eventual oversupplied market, there is expectation of much full fashioned installation in the South. "That is the indicatoin," it was stated by a person speaking for William F. Lotz, Philadelphia, engineer and builder, specializing in hosiery mill construction, who has the contract for the erection of the plant of Carolina Silk Products Corporation, Greensboro, N. C. He saw no sign of northern manufacturers removing their plants to the South, stating the expansion there would be, in his judgment, fostered mainly by southern interests, with southern capital. While it was believed this builder could tell of other full fashioned plants in contemplation in the southern knitting belt, he gave no intimation of localities in which such projects are receiving

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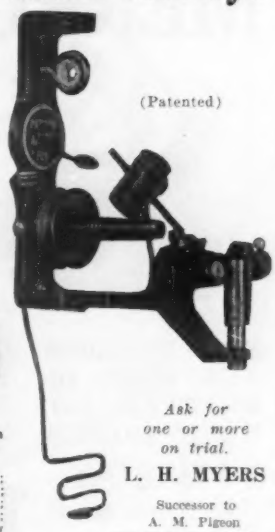

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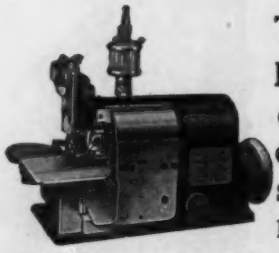

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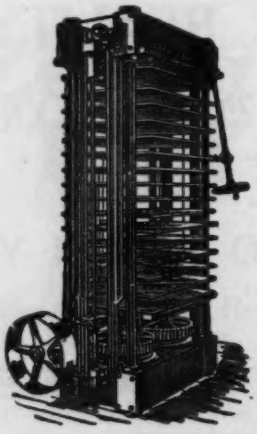

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May we have the opportunity of demonstrating the saving made possible through this method of buying quality throwing?

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consideration.

It is stated on seemingly trustworthy authority that the Golden Belt Manufacturing Co., full fashioned and seamless hose, has contracted for deliveries of 26 Theodore Lieberknecht high speed machines as an addition to the present plant, at Durham, N. C. One of the more important circular knitting corporations in Tennessee is known to have in contemplation the installation of 42 gauge machines, while having no intention of discontinuing the production of women's circular knit. Some interests appear to feel that a full fashioned mill in the South as a William F. Taubel, Inc., branch is not far from a possibility.

From a Machine Building Angle.

The Richter Machine Co., Philadelphia, builders of full fashioned hosiery machines, have been taken over by the Wildman Manufacturing Co., Norristown, Pa., builders of spring needle and other circular knitting machinery. The negotiations for the sale were concluded about the first of November, according to Kenneth Howie, managing executive of the Wildman company, and Wolfgang Richter, former virtual owner of the Richter machine interests.

Under the changed ownership the parts for the Richter machine will be made in Norristown by the Wildman Manufacturing Co., but will be assembled, for the present at least, at the present Richter factory, where Mr. Richter will continue as manager, said Mr. Howie, who states the machines will be of 39, 42 and 45 gauge respectively.

Production of the Richter machine never has been on a large scale, but is expected to be considerably increased, as it is the intention to more actively promote its sale. The Wildman company, it is pointed out, being a powerful and widely known corporation, with a trained selling organization, is equipped for giving to the machine a prestige which it could not enjoy heretofore. Richter machines are in use in a number of mills where, it is stated, it is said to be the intention to add more. There is in course of perfecting an attachment for automatically turning the welt in the process of knitting the stocking, a device which, if it prove a success mechanically, will, it is expected, become a very strong feature of Richter construction.

Along this same general line is a report which came out several weeks ago, but not confirmed, to the effect negotiations were under way between the Hemphill Co., builders of Banner machines, and the builders of the Karl Lieberknecht full fashioned machines in Germany, looking to an arrangement under which the Hemphill organization would build Karl Lieberknecht machines, for, in part, the American trade. The Hemphill Co. at the time made no flat denial of the report, but declined to make a definite statement, intimating something definite might be announced later.

Clarence H. Taubel, president of William F. Taubel, Inc., for some time has been a heavy stockholder in the Hemphill Co. It may have been a mere coincidence that report of the arrangement with Lieberknecht interests made its appearance in the trade simultaneously with announcement that the Taubel organization would shortly install 27 Karl Lieberknecht machines—21 leggers and six footers. At any rate, the two became linked up in a way that was viewed as giving credence to the machine building arrangement said to be under way.

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The Yarn Market

Philadelphia, Pa., November 16th, 1926.

Published prices in the Philadelphia cotton yarn market today compared with the quoted rates appearing in this column for a month ago yesterday, show a situation ranging from practically the same figure in some numbers to a drop of several cents in others. For the entire list, however, it can be said that a general reduction in the prices has taken place.

On October 15th, 30s single warps were listed at an asking price of 35½ cents. Today's quotation for this number is 34½ cents, lower by half a cent than the bid of a month ago.

30s two-ply skeins have maintained a price of 35 cents a pound, this comparison shows, while 26s/2 warps have skidded from 34½ cents to 32½ cents.

In cotton hosiery yarns, 30s singles lost two cents over the month, coming to 31 cents from a price of 33 cents on October 15th.

Survey of some of the finer yarns in the higher counts shows comparatively little loss generally.

These comparisons are made on the published lists of quotations which are accepted as the base for operations in the market; and it is understood of course that sales above and below them, depending upon conditions surrounding the case, are made in individual instances.

The past month in the market witnessed some complicated situations, and while apparently a lower price level is presented at its close, the period can be considered healthful for the market, according to dealers.

The crop reports of October 25th and November 8th came within this month, but so far as the yarn market was concerned, the unprecedented prediction of large crops had evidently been discounted, to judge by the actions of the market following the reports, because an unexpected stability was manifest. This was attributable in part to the conduct of the cotton market itself under these conditions.

After a reasonable action in regard to production during the summer months, some factors felt that with the approach of Fall and the prospect of new business, the spinners were in danger of piling up stocks. There calculations appeared largely to be based on government figures of spindle operation, but no account was taken of the fact that much of the spindle operation applied to mills weaving their own products and therefore without the sphere of this market's activities. Also, it was brought out, the curtailment activities of the summer had prevented any excessive accumulation of mill stocks, and also a large percentage of the plants were operating on unfilled orders.

In any case, something of the sort was responsible for a continued firm stand on the part of spinners in the face of offers of business at concessions, the lower published rates not representing in any way a tug-of-war occuring during the month. For the spinning end manifested a determination similar to that which has characterized their movements for some time past.

With the arrival of new low rates for cotton, which seemed to represent approximately the bottom, buyers showed greater interest. In few instances, however, did they find distress yarns, the absence of stocks at mills and dealers hands contributing largely to the stability of the market. The problem of the buyer seemed to be the securing of yarns for spot delivery, with mills generally apparently taken care of for some time to come.

It is felt that with the stabilization of the cotton market itself, the buying movement in yarns which has been delayed so long will manifest itself in a general way and that business will be improved considerably in the yarn market.

Philadelphia prices on November 16th follow:

Single Skeins

4s to 8s	24½	10s	25
12s	25½	14s	26
16s	27	20s	27½ @28
24s	31	26s	32
30s	34		

Single Warps

8s	25½	10s	26
12s	26½	14s	27½
16s	27½ @28	20s	28½ @29
26s	32½	30s	34½
40s	44		

Carpet and Upholstery Yarn in Skeins

8s 3-4 hard white warp twist	24½
8s and 9s 3-4 tinged tube	21
8s 3-4 hard twist waste	20

Two-Ply Skeins

8s	25	10s	25
12s	25½	14s	26
16s	27	20s	27½ @28
24s	31½	26s	32½
30s	34½ @35	40s	43

Two-Ply Warps

8s	26	10s	26½
12s	25	14s	25½
16s	28	20s	28½ @29½
24s	32	26s	32½
30s	34½ @35	40s	44

Frame Spun Carded Yarn on Cones

8s	24½	10s	24½
12s	25	14s	35½
16s	26	18s	27
20s	27½	22s	27½ @28
24s	28½	26s	29½
30s	31	40s	42
30s double carded	34	30s tying in	31

Two-Ply Combed Peeler Skeins and Warps

8s to 16s	40	20s	41
24s	43	30s	47
40s	53	50s	58
60s	67	70s	80
80s	87		

Single Combed Peeler Yarn on Cones

18s	40	24s	42
30s	45	36s	48
38s	50	40s	52

Mule Spun Carded Yarn on Cones

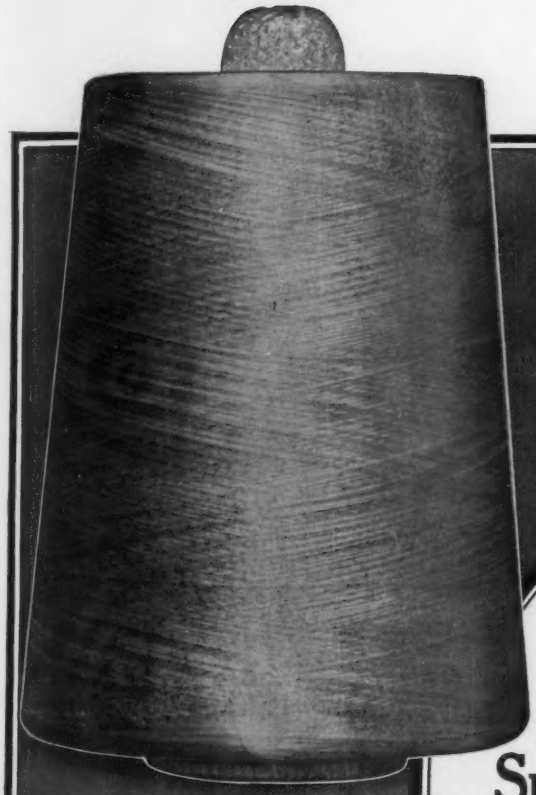
10s	31	12s	32
14s	33	16s	34
18s	35	20s	36
24s	37	26s	38
30s	39	40s	47

Mule Spun Combed Peeler Yarn on Cones

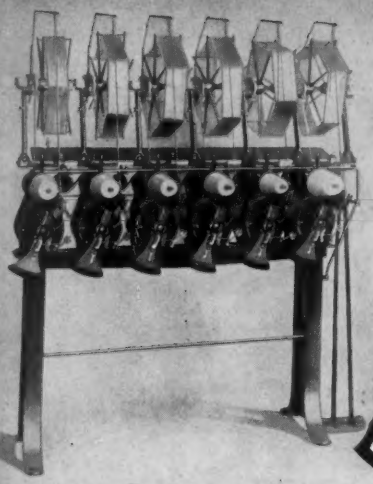
10s	40	12s	41
14s	42	16s	43
18s	44	20s	45
22s	46	26s	48
28s	49	30s	50
36s	52	38s	55
40s	60		

The Merrow Machine Company of Hartford, Conn., has recently perfected a new model—Style 60ABB—which meets the long felt need among manufacturers of cotton, woolen or silk piece goods for a machine to trim and in the same operation join in a strong, flat butted seam the ends of such goods for subsequent finishing processes, such as washing, bleaching, calendering, shearing, dyeing and printing. By avoiding laps of material considerable economy is effected and the goods allowed to pass through the finishing machines uninterrupted, thereby inducing a saving in labor.

The machine is supplied either with two threads or a single thread, the latter preferred on woolen piece goods as the one thread seam can be readily ravelled out after processing, eliminating the necessity for cutting the material and at the same time removing all cotton thread from the woolen cloth.



Weight of Contents
One Pound



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The Knit Goods Market

Developments in the field of hosiery are coming thick and fast, with announcements of further expansion in full fashioned, an indicated broadening interest in women's seamless, encouragement for advocates of novelty half hose for men, an upset condition in infants' socks and intimations of keener competition next year; a craze for patterns in misses' ribs and boys' golf hose, and negotiations whereby important full fashioned machine builders are setting a new pace in that field.

The last quarter of the year is proving an eventful era for the knitting trades in general. Conditions without precedent called for a breaking away from business traditions in cotton underwear, manufacturers striving by every means to protect distributor interests at a time when they seemed to be threatened by an unorganized retailer body.

In the sweater and kindred outerwear trades a six months' business is being crowded into as many weeks, with a very strong probability numbers of mills will close the year unable to deliver all they had sold and dealers clamoring for goods which they had bought—too late in the season for supplying their needs.

Consumer interest in most classes of knitted goods is well sustained, and deferred preparations for the holiday trade make for a period of briskness with which even those depending on a 24-hour delivery service could not cope. Despite an unsettled state of the raw material markets, prices of finished goods have been practically maintained by mills. Demand still is about abreast of supplies and more business than generally is suspected has been placed for the first quarter of next year, although it seems not improbable the bear element may find opportunity in the first weeks of 1927 to make a raid on prices. A lull in hosiery seems logical, but this may be compensated for in great measure by activity in both light and heavy weight underwear, while the possibility of disappointment for certain sweater interests, who may have named 1927 prices prematurely, does not appear remote.

Hosiery.

While climatic conditions have been favorable to silk staples in women's hosiery, wool lines in the popular price brackets have been selling up to the ability of manufacturers to make deliveries. Not in a long time have mills been under so severe pressure for shipments, and not a few whose lines are well established have been operating day and night. The same is true as to juvenile wool hose in patterns and men's novelty half hose.

Jobbers as a class placed practically no orders until August-September. All came on the market in October-November, with the result manufacturers had to decline considerable business and found difficulty in making satisfactory deliveries of orders which were accepted. Several leading mills shut down on orders for shipment after December 15, which was regarded as about the date when prices for the next wool season might be named. A few will not be able in the meantime to make up samples of 1927 wool hose and, mill executives say, they will have nothing but staples to show at the opening, if it be staged during December.

Some doubt the wisdom of undertaking to sell wool goods within the next two months for the fall and winter of next year, deliveries to begin about August. Patterns will prevail, it is stated, and it will be practically impossible for jobbers to decide so far in advance as to what they may require. The best that manufacturers might expect on a December or January opening, some believe, would be open orders for samples, which usually are viewed as nothing more than an expressed intention to take the goods if nothing untoward occur.

Women's plain color wool and two tone are believed to be a reasonably safe proposition for early operating. Such lines seem fairly well standardized for the dollar-a-pair price bracket, but it is doubted whether sports goods will receive much attention until toward spring, when a more nearly settled condition in wool, silk and rayon will have been reached, it is thought.

Juvenile hose, judging from present styles, may for a few months remain a problem as to 1927. In the golf and seven-eighth lengths there are the plain top on fancy leg and fancy top on plain leg and the fancy from top to bottom, but no all-over plain. In the full length combed and mercerized ribs there appears well sustained interest, with prices seemingly too low to be comfortable for manufacturers. Some factors report the fine gauge combed selling better than the mercerized, in the one time staple full length. This is for immediate and does not contemplate next year's vogue.

There is especially keen interest in sports hose for misses for the spring and summer of 1927, manufacturers being intent upon preventing any serious inroads by the full length silk and silk-and-rayon for young misses, a type of stocking in which business is being helped along by the fact it is coming on the market more freely in full fashioned construction, from such mills as that of the McCallum Hosiery Co., whose sales of misses' silk this year to date are understood to show a 100 per cent gain over 1925. It still is a question whether, with the return of summer, the young miss will insist upon having the kind of stocking her seniors wear. Manufacturers of novelties will strive by the presentation of attractive new patterns, to persuade her to arrive at a negative conclusion.

There has been almost phenomenal demand for infants' cotton socks commonly described as cashmerette. The comparatively few mills making this type of sock were in arrears with deliveries. One shut down in July, when there was in the stockroom an accumulation of 10,000 dozen pairs. This was wiped out in short order by early November, when the mill began operating overtime and still could not keep customers supplied. "We are shipping them out as fast as we receive them," it was stated at a leading jobbing house, with which conditions are typical of those in most similar establishments. Distributors had deferred their commitments, was the one explanation for the scarcity.

As a broad proposition, this has not been a satisfactory year for manufacturers of infants' socks. A very few have sold their production. Some say they feel tempted to abandon the manufacture of socks for infants. It is the understanding a manufacturer who is credited with having virtually dominated the sock market this year will bump up against very keen competition when next year's lines are opened for the ensuing season, for it is stated a well known southern concern has arranged to install 100 Banner machines.

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MANUFACTURERS OF

Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

The infants' sock trade seems to have become upset by low prices at which rayon goods were put out, making them available to chain stores for a 20 cent proposition. One line has been sold at $1.65 a dozen as a quantity price. It is the opinion of some that the rayon sock should not have been permitted to go into the quarter dollar class—that it would be an ideal 35 cent seller had it been kept out of the big chains.

There appears to exist a somewhat complex market situation in women's silk hosiery, a condition due in part to retarded sales of wool hose while the shopping element was waiting for the advance agent of winter. Leading shops well stocked with sports and plain wool goods have been disappointed with their slow movement and were in no hurry to detail orders for silk. They passed the buck to jobber and manufacturer, and in the last analysis it was the latter that carried the bag. Mills well sold ahead accumulated stocks in the gray and, while some were booking 1927 business, many would have felt less uneasiness could they have arrived at an estimate of their production needs a month or two hence as ought to have been disclosed in orders on their books.

A Pennsylvania manufacturer, not in the larger division, last month had a very large accumulation of undyed chiffons, at a time when there was conflict of opinion as to the outlook for the sheer. About that time there was reported broadening interest in medium and service weights, and it was noted some mills hitherto making chiffon hosiery almost exclusively were anticipating greater demand for seven thread goods. In fact, it was noted in the raw and thrown silk trades that manufacturers were specifying more of 8 to 11 thread. This may have been simply a seasonal shift to heavier fabric, but it appeared that mills selling to retailers direct were shipping out sheer hose as usual, which left the inference the jobbing trade, in certain quarters, was turning to heavier fabric for next year. In the late fall of 1925 jobber mills were booking chiffon orders almost exclusively. This year, of course, the business is being divided among more mills, so that it is possible just as many chiffons are being bought as a year ago, and it is within the range of possibility that full fashioned hose may be coming on the market pretty nearly as fast as it can be absorbed.

While it cannot be said the market has suffered disturbance from price changes, offerings at less than the market have been rather free ever since the startling reduction made by the Quaker Hosiery Co. about three months ago. Last month the Largman Gray Co., manufacturers of Blue Moon brand full fashioned silk, came out with a downward revision, by which retail stores were expected to lop off 25 cents a pair, making the new price $1.95. This announcement was received when short boot silk hosiery was being offered at sacrificial prices.

While unbranded 20 and 21 inch boot hose was being offered in the primary markets at prices which made it a possibility as a dollar a pair proposition, it was noted that branded short boot goods were selling at around $1.50 in certain high class stores. Thus it would appear there was no warrant for sacrificing the unbranded. Doubtless the reports of the extent to which dumping undesirable goods was resorted to were magnified in the interests of the bear element made up largely of dealers who buy prices instead of merchandise.

Low prices in numbers of the department stores had the effect of disturbing dealers generally, which may have accounted for the tardiness as to detailing orders and buying for future. Retailers say competition in silk hosiery never was so keen as it now is. There is support for this view in the showings of right good full fashioned silk to welt for as little as $1.25 a pair, netting the store a very thin margin of profit.

While the efforts of certain jobbers to shatter prices have been productive of the exploiting of much cheapened hosiery, it is known that numbers of stores have a markup of but 25 cents a pair, and sell under an unconditional guarantee. An establishment running a sale of seamless chiffons at a dollar made it a condition of sale that "if they rip, run or tear you get a new pair." Another, selling full fashioned silk to welt at $1.25 and giving with each pair a toilet accessory as a bonus that cost the establishment 15 cents each, guaranteed to accept return of any pair that proved unsatisfactory for any reason. This was competition intensified to which exclusive shops do not resort, of course, but they felt the effect of it. And mills which depend mainly upon jobbers who shop around were in like manner a thorn in the side of those which represent the bone and sinew of and the capital in the industry.

As a broad proposition the full fashioned manufacturers are comparatively well situated in relation to current and future business. There are more satisfied than dissatisfied manufacturers, and neither is confined to any classification as to mill capacity. One of the smaller establishments was sold up early in November to the end of December and taking some 1927 business in women's full fashioned silk. Another, which began business less than six months ago, was operating part of the plant overtime. Few of the mills in Reading are begging for orders, and some are increasing their output. One of these is the Reading Full Fashioned Hosiery Mills, in which the Bausher interests are heavily concerned financially. The Gold Seal Knitting Co., manufacturing spring needle hose, has installed the first of a battery of German built full fashioned machines and will be in operation this year, with its production practically sold. There is a less uniform situation in Philadelphia, where probably a half dozen full fashioned plants are known to be available to intending investors in hosiery equipment. But there are no bargains in 42 gauge machines in service, and 39 is held for all it is worth.

It should be not surprising if in the next few years expansion in the full fashioned industry be more rapid in the South than in the North. Some interests contend that, as in seamless, the trend is toward southern domination in full fashioned, and predict that if there comes a time when there is a surplus of the latter, southern mills, in conjunction with rural mills in the North, will dominate prices. What, in the meantime, will be the fate of the seamless industry, is a moot question in the trade.

High grade fine gauge seamless silk hosiery for women continues in right good call. In fact, several manufacturers of 300 needle silk boot hose in November were having all the business they could take care of. This gauge hose in semi-chiffon weights is believed to have detracted to some extent from the business in spring needle goods. It seems apparent there is a wide open market for silk hose to sell at a dollar a pair, and the consuming public, it appears, makes no distinction as between the spring and latch needle product, so long as it is a dollar stocking, snug fitting at the ankle and roomy at the top. But there is a widening

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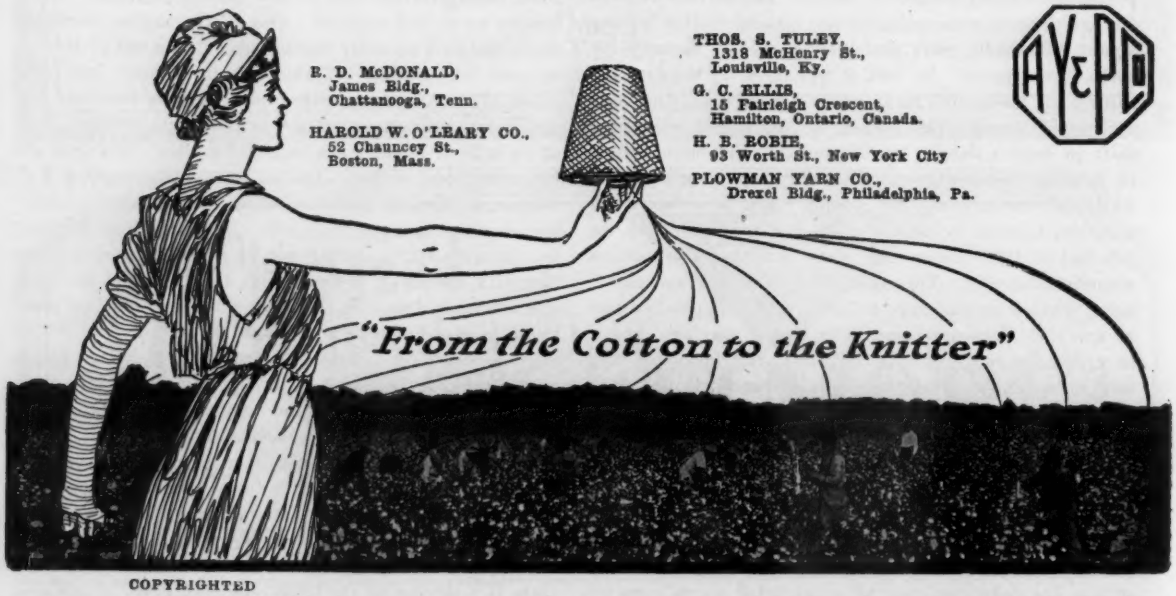

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antagonism in the trade to hosiery that is not full fashioned.

A Pennsylvania manufacturer of latch needle silk wanted to put in his line in a store in Colorado a few weeks ago. The management said no one was wearing seamless-made hose and refused to install the line until after the manufacturer had demonstrated to the management's satisfaction that it could be sold. Space was set apart for a demonstration and a complete assortment of sizes and colors was put in stock. A professional demonstrator was put in charge, and in four days the department showed receipts of over $2000 from sales of seamless hose. The store now has this mill line in stock.

Seamless interests have been a trifle slow in their merchandising. It is going to be difficult for them to prevent further inroads on their business by the full fashioned. That manufacturers now making seamless silk only, will, in the next few years, make heavier investment in flat than in circular machines, seems a pretty safe conclusion.

While some distributors are over-conservative in their commitments for women's and children's staple hosiery for next year, they are placing contracts for men's high grade fancy half hose, in which, it might be said, there is not a staple pattern. Two mills in particular, which employ specially constructed mechanical attachments for producing design without limitation, are taking a good volume of business in lines to go over the counter at a dollar a pair. They are knitting in, during the process of forming the stocking, what is equivalent to a substitute for the commonplace clocking. That is, the socks show zigzag and vertical pinstripes on plain colors and two tone. A rayon with silk plaited on is a very clever creation in this class and seems promising of a large sale for the few mills making it.

Some interests, adhering to the extreme in gaudiness, are partial to diagonal stripes and much coloring. On the other hand, there seems a tendency to the more conservative, more of plain background for small designs, including circles and rectangles within such figures. Meanwhile establishments making a business of swiss clocking appear to be well engaged with plain color silk socks, and the comparatively few manufacturers of full fashioned say they believe their next year's business will run well ahead of that for 1926. Well made seamless of around 12 to 14 thread silk, in split foot construction, appears to be in increasing call as a sock for the 75 cent price bracket.

If ever novelty half hose loses its attractiveness it will be after the low price lines have been forced out of the running. These are in very large production and are at the best a precarious proposition. What once were fetching patterns become the stock in trade of soap box merchants operating on sidewalks, with a half dollar for three pairs as a catch price. Right here it may be said that plain color silk socks seldom are seen in such sales, nor do they embrace exclusive patterns from mills which control them and are wise enough to never glut the market with any one design, no matter how strong a seller in its early days. It is pointed out that such manufacturers sold a restricted output of the higher price fancy half hose 10 to 15 years ago, and they probably will be doing the same with their respective lines years hence, after the cheap pattern sock has become obsolete. Men like 'em fancy, but not commonplace.

Trading in plain cotton hose of other than low end construction seems likely to be held in check by not only the prospect of price readjustment, but because of yielding to silk-and-rayon in combination and the all-silk. The stocking of rayon in combination with silk is a recognized breadwinner. Men's and women's mercerized will to a considerable extent be substituted for combed, while the latter, in half hose, probably will be in sharper competition with high graded carded. For women there is foreseen a right good mercerized at a quarter a pair, and rayon plaited on mercerized at a half dollar.

Underwear.

There exists a somewhat chaotic condition in men's cotton underwear, and there is little prospect of the situation becoming clarified until prices for heavy weight cotton ribs have been definitely named for the winter of 1927-8. It is questioned by manufacturers and jobbers whether it was not a mistake on the part of mills to offer heavy weights on memorandum, prices to be determined at the formal opening. This was resorted to by some of the southern manufacturers at the outset of a near approach to stagnation in October-November, as a means for obtaining some early 1927 delivery business, with which to keep plants in operation, for it appeared from the attitude of jobbers toward 1927 underwear that manufacturers might find it necessary to lay off much help in December and January. To obviate this, manufacturers proposed that jobbers place open orders. But buyers seemed scary over almost any proposal of manufacturers.

As long ago as October 19 the Oneita Knitting Mills formally advised their trade as follows: "On any fleece lined or ribbed underwear bought of and shipped by us after November 1st, 1926, that you may have unsold December 31st, 1926, we shall make you a price adjustment on the basis of our January, 1927, opening prices, provided they are lower, any claim under this arrangement to be sent to us on or before February 1st, 1927."

In the Oneita company's letter to this effect it was suggested that the arrangement proposed might "be of assistance to jobbers in preparing their duplicate orders for the remainder of this year." Like the proposal for accepting business on memorandum, this specific price protection did result in jobbers buying slightly more freely for the current season, as they were fully protected against any raid by retailers as to goods which they had bought and which remained unsold. It was a check to demand for rebates, as there was nothing in the offers from mills to indicate what the new prices might be, and the plan doubtless would have worked out reasonably satisfactory to all interests but for the haste of some few mills in coming out with flat quotations for spot goods.

With many jobbers seemingly distrustful of a possible joker in the offer of manufacturers to protect them as to orders placed this year, some manufacturer conceived the idea they might take more kindly to prices designated in invoices for underwear for their December distribution, and came out with a substantial markdown from the season's list. This necessarily precipitated some confusion, as it supplied an intimation as to what might be the approximate level of prices at the January opening, a prospective level with which some jobbers were not altogether pleased, particularly those with goods bought prior to November. It was aimed, of course, to make a cleanup of stocks of high price stock in advance of the inventory, and to take no chance with goods bought on memorandum, of then uncertain value. While shaping their stocks in this respect, jobbers realized the danger of leaving any opening for a

general clamor by retailers for rebates.

Prices in the primary market were tumbling, of that there could be no doubt, but there seemed little probability the declines would reach the consumer as to underwear for the present winter, unless stocks among merchants are more cumbersome than is commonly supposed, and abnormal temperatures prevail after the first of the year.

In the event there be a general cleanup of stocks, there should be a healthy market following the opening, assuming prices will be low enough to carry virtual assurance there can be no material revisions. The situation should be the more active from the fact that by January, distributors may be expected to resume contracting for light weights for spring and summer. Some say leading jobbers have anticipated their requirements. It is known, however, that in November there remained much light weight knitted underwear for men to be bought, but some of the tardy jobbers said they doubtless would be ready to operate in December, and it was apparent even last month, in the business being taken by some of the larger mills, that the distributing trade had become more friendly to the revised prices. A North Carolina mill has sold fairly heavily of combed ribs, it is stated by the management, while yet to hear from some important customers. Conditions with this establishment may be assumed to be representative of those existing in others.

Comparatively little business in women's light weight cotton underwear had been placed with mills to November, and most of the factories in Pennsylvania, having completed their medium weight season, were operating on much reduced schedules. Manufacturers said they probably would have few detailed orders before along in January, but the rank and file express themselves as well satisfied with the outlook for next year. With silk and rayon not sharing in the decline in cotton, it is held, finer gauge cotton underwear, at or below the prices this year for less attractive goods, is promising of coming into more general use, and much is expected by manufacturers who have materially improved their lines of union suits and bloomers.

Sweaters.

As sweater lines for 1927 were opened in New York on November 15 and a week later in Chicago, it is too soon to approximate the results from the formality. It can be stated as a probability, however, that there will be no momentous operating in sweaters until after road men for mills have returned from their initial tour of distributors.

Few manufacturers approached the opening in a spirited way. They regarded it in the light of a feeler, assuming it would at least supply an index for the 1927 campaign.

Although it is felt that for the worsted and the cotton back sweater semi-raw materials will not be bought during the season for lower than current prices, there exists the fear jobbers will defer contracting as long as possible, as they did this year. There was much difficulty with deliveries, beginning in October. Few mills got off a normal year's production and numbers of distributors were, at times, worrying along on run-down stocks. But there has been reported nothing so calamitous by reason of late contracting in 1926 as to very much change the attitude of buyers in relation to 1927, it is held by interests predicting there is going to be no haste on the part of jobbers to contract for deliveries beginning in August-September.

In another month or two there should be some activity in bathing suits, which were lagging during the pressure upon mills for sweaters, and it seems not improbable that a resumption of trading in bathing suits will be a direct outcome of the early showing of sweaters.

Huge Industry as "By-Product" of Waste Materials.

The Davenport Manufacturing Company, of Davenport, Iowa, manufacturers of Schick all steel fire-proof baling presses, have just been awarded some very valuable patents on their complete line of hand and power balers. These balers and the huge industry which is necessary for their manufacture represent, figuratively speaking, a super "by-product" of waste materials. This interesting industry, which has grown in the course of years from a small shop to a large corporation occupying many acres of floor space and large modern factories, has resulted largely from successful efforts to educate the American people to the importance of, and profits to be made in, the conservation of waste materials.

The Schick baler is marketed all over the world and has proved satisfactory as a baler of all kinds of waste from silk cuttings to metal scrap. Where a few years ago, but one or two balers were made in a week, production has increased until today large shipments of balers are turned out every day. Sales are increasing with the growing public interest in conservation of waste.

As an example of the possibilities in conservation of waste it is stated that careful investigation has revealed that more than $30,000,000 worth of waste-paper alone, is burned or destroyed annually in the United States! Such waste, when properly prepared and marketed would, in the case of just one eight or ten-story office-building sell for more than $3,000 a year. In other buildings, factories and industries, where waste is sold, or returned to the manufacturing process, proper handling of the materials has resulted in handsome profits through reduced labor costs and proper preparation of material for reworking or market.

"The gratifying growth of our business," states Henry Weissenbach, Director of Sales, of the Commercial Fibre Company of America, Inc., "has necessitated the removal of our New York headquarters to the Madison-Belmont Building, 40 East 34th Street. One of the underlying causes for this increase is the Commercial Fibre Company's converting plant in Passaic, where the Snia product is processed in converted form. It is one of the most modern and thoroughly equipped plants for converting rayon yarns, and through improvement in facilities there is an increased volume and quality of output. The Commercial Fibre Company is sole importer of Snia-Viscosa products." Mr. Weissenbach further states, "The rayon produced by the Snia-Viscosa factories especially adapted for American consumption, is a big factor in the necessity for these increased sales facilities. In our new and more commodious offices we will be in a position to serve the consuming industries better than ever before. The trade is cordially invited to inspect the new quarters, and to avail itself of our services and facilities."